Guca1b Cas9-KO Strategy

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Project Overview

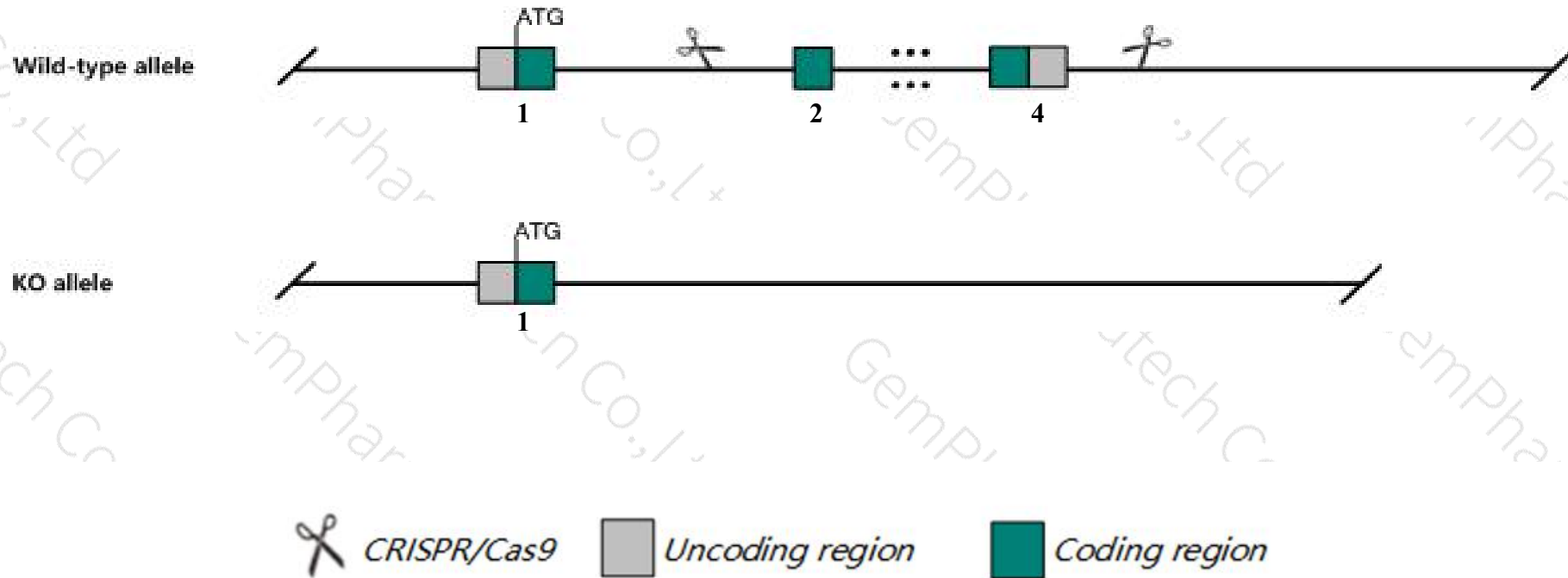|	
Project Name	*Guca1b*
Project type	**Cas9-KO**
Strain background	**C57BL/6JGpt**

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Guca1b* gene. The schematic diagram is as follows:

Technical routes

➤ The *Guca1b* gene has 2 transcripts. According to the structure of *Guca1b* gene, exon2-exon4 of *Guca1b-201* (ENSMUST00000024774.13) transcript is recommended as the knockout region.The region contains most of the coding sequence Knock out the region will result in disruption of protein function.

➤ In this project we use CRISPR/Cas9 technology to modify *Guca1b* gene. The brief process is as follows: gRNA was transcribed in vitro.Cas9 and gRNA 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 null allele exhibit abnormal rod electrophysiology.

➢ The knockout region is near to the C-terminal of *AC112683.2* gene and *Guca1a* gene ,this strategy may influence the regulatory function of the C-terminal of these genes.

➢ The *Guca1b* gene is located on the Chr17. 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 gene knockout on gene transcription, RNA splicing and protein translation cannot be predicted at the existing technology level.

Gene information （NCBI）

Guca1b guanylate cyclase activator 1B [*Mus musculus* (house mouse)]

Gene ID: 107477, updated on 19-Nov-2019

▲ Summary

Official Symbol	Guca1b provided by MGI
Official Full Name	guanylate cyclase activator 1B provided by MGI
Primary source	MGI:MGI:1194489
See related	Ensembl:ENSMUSG00000023979
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	GCAP2; BC018258
Expression	Ubiquitous expression in bladder adult (RPKM 1.3), adrenal adult (RPKM 0.7) and 28 other tissues See more
Orthologs	human all

▲ Genomic context

Location: 17; 17 C

See Guca1b in Genome Data Viewer

Exon count: 4

| Annotation release	Status	Assembly	Chr	Location
108	current	GRCm38.p6 (GCF_000001635.26)	17	NC_000083.6 (47384694..47392967)
Build 37.2	previous assembly	MGSCv37 (GCF_000001635.18)	17	NC_000083.5 (47522342..47529916)

Transcript information（Ensembl）

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

| Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Guca1b-201	ENSMUST00000024774.13	1668	201aa	Protein coding	CCDS28847	Q8VBV8	TSL:1 GENCODE basic APPRIS P1
Guca1b-202	ENSMUST00000145462.1	1556	230aa	Protein coding	-	E9PWU1	TSL:2 GENCODE basic

The strategy is based on the design of *Guca1b-201* transcript,The transcription is shown below
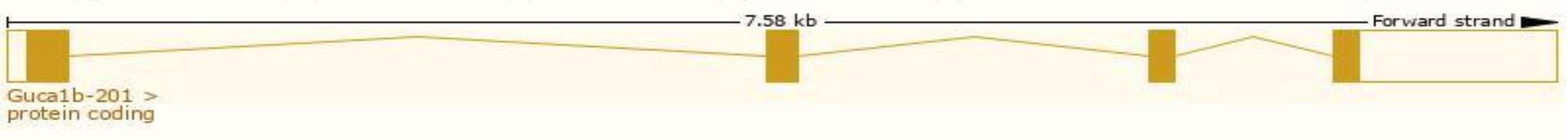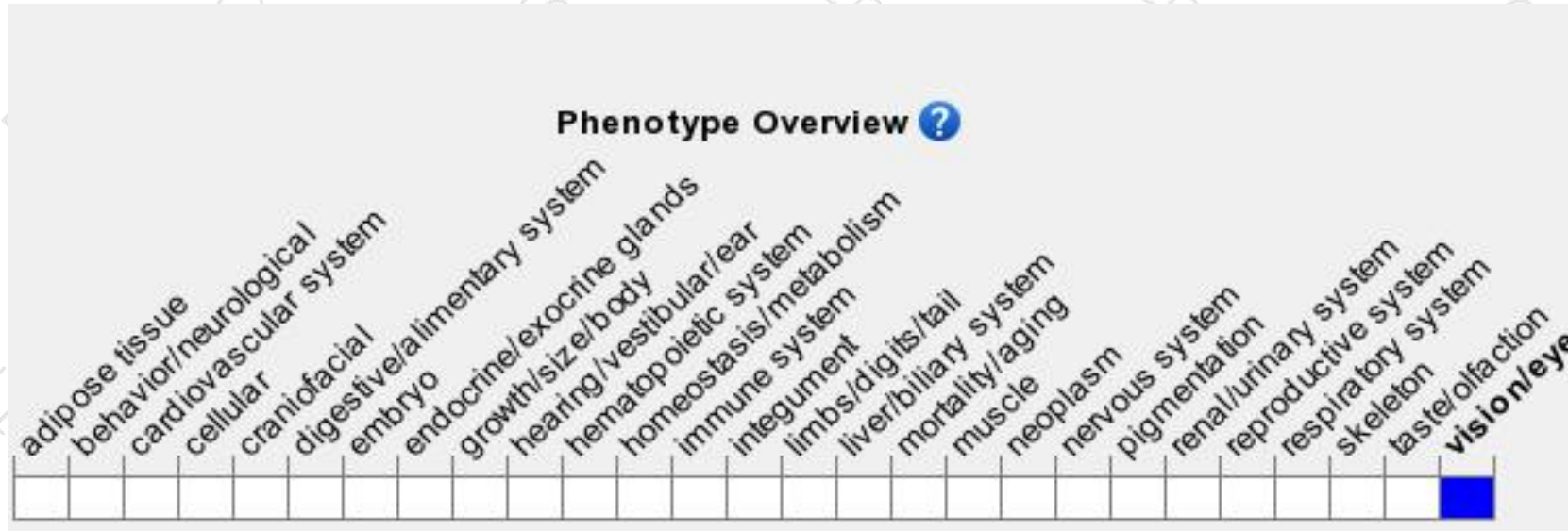
Genomic location distribution
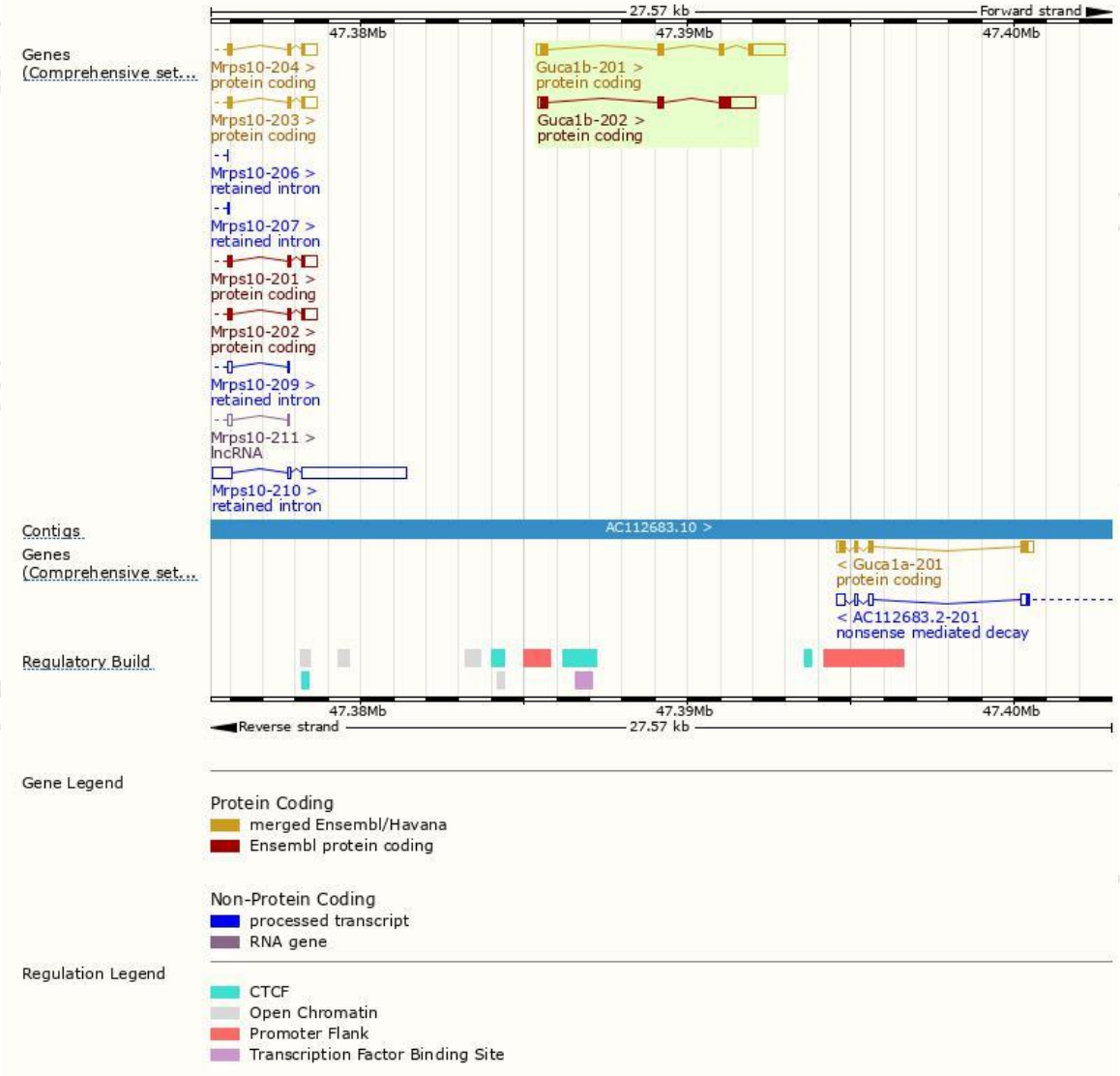
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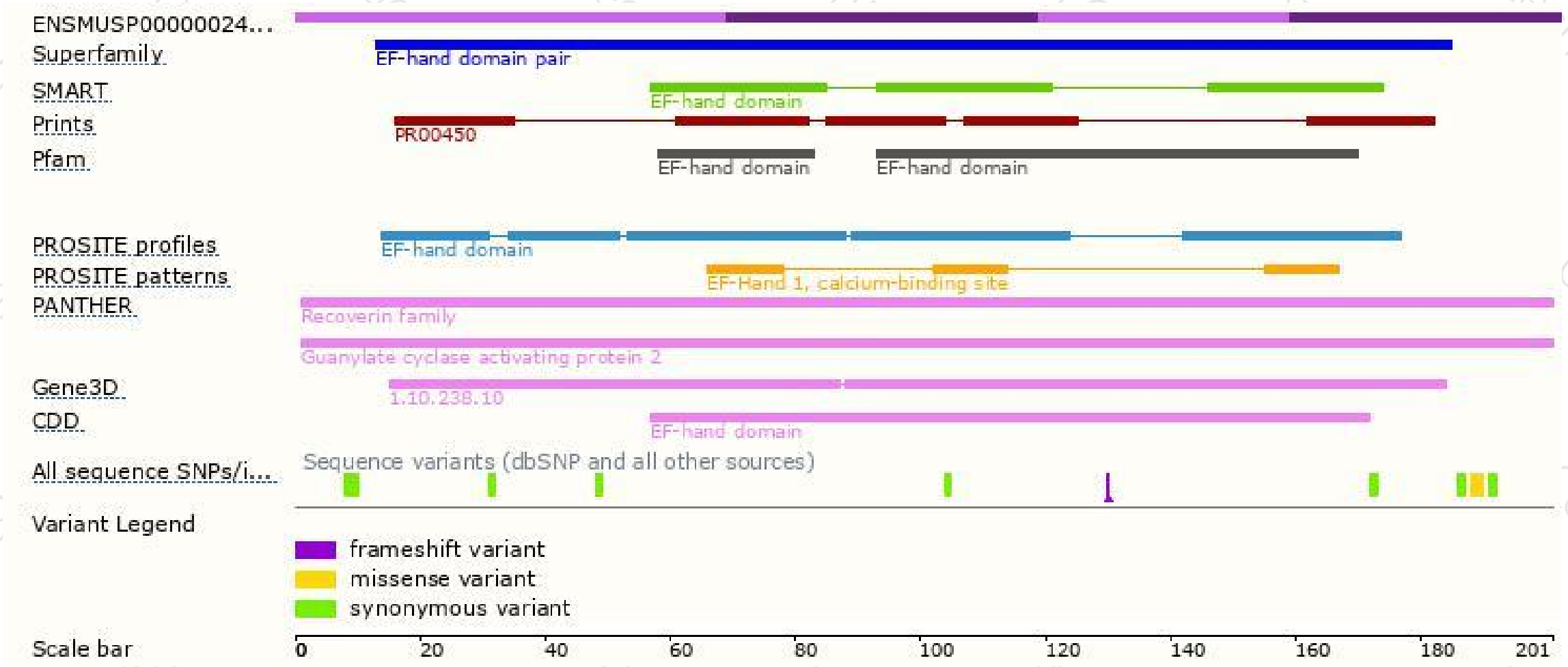
Mouse phenotype description(MGI)

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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