Grb7 Cas9-CKO Strategy

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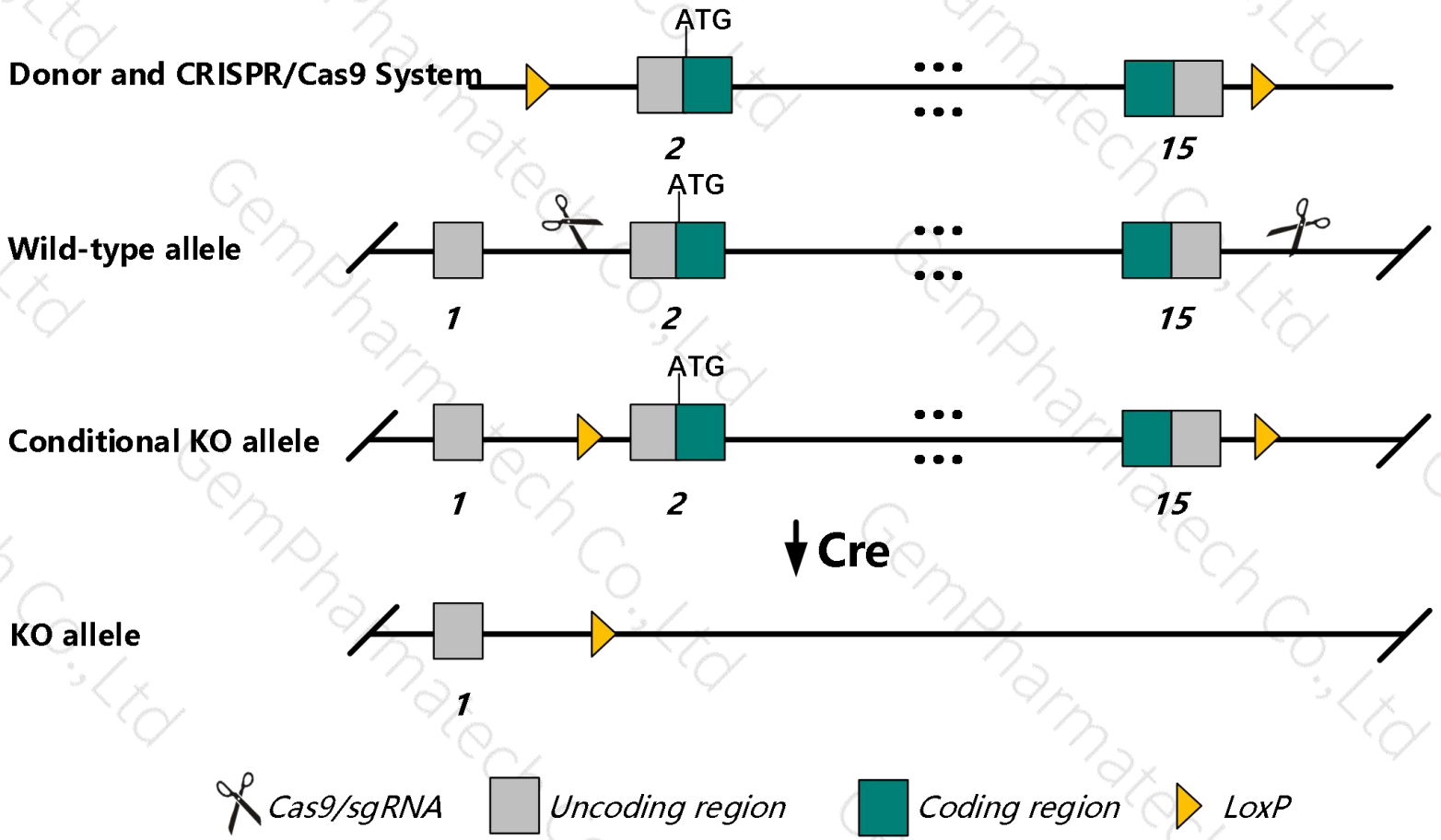
Project Overview

Project Name	***Grb7***
Project type	**Cas9-CKO**
Strain background	**C57BL/6JGpt**

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Grb7* gene. The schematic diagram is as follows:



Technical routes

- The *Grb7* gene has 6 transcripts. According to the structure of *Grb7* gene, exon2-exon15 of *Grb7-201* (ENSMUST00000019456.4) transcript is recommended as the knockout region.The region contains all 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 *Grb7* 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

➢ The *Grb7* gene is located on the Chr11. 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）

集萃药康 GemPharmatech

Grb7 growth factor receptor bound protein 7 [*Mus musculus* (house mouse)]

Gene ID: 14786, updated on 12-Aug-2019

Summary

Official Symbol	Grb7 provided by MGI
Official Full Name	growth factor receptor bound protein 7 provided by MGI
Primary source	MGI:MGI:102683
See related	Ensembl:ENSMUSG00000019312
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	mKIAA4028
Expression	Broad expression in kidney adult (RPKM 50.8), liver adult (RPKM 48.1) and 17 other tissues See more
Orthologs	human all

Genomic context

Location: 11 D; 11 61.75 cM

See Grb7 in Genome Data Viewer

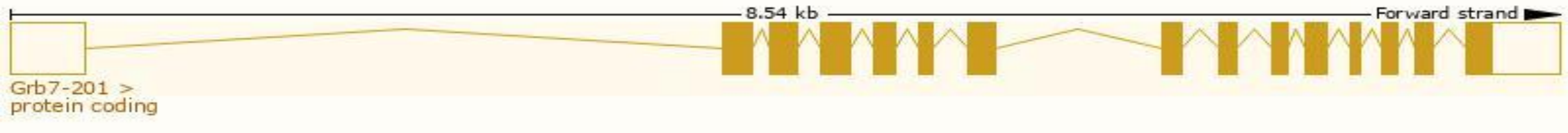
Exon count: 17

Transcript information（Ensembl）

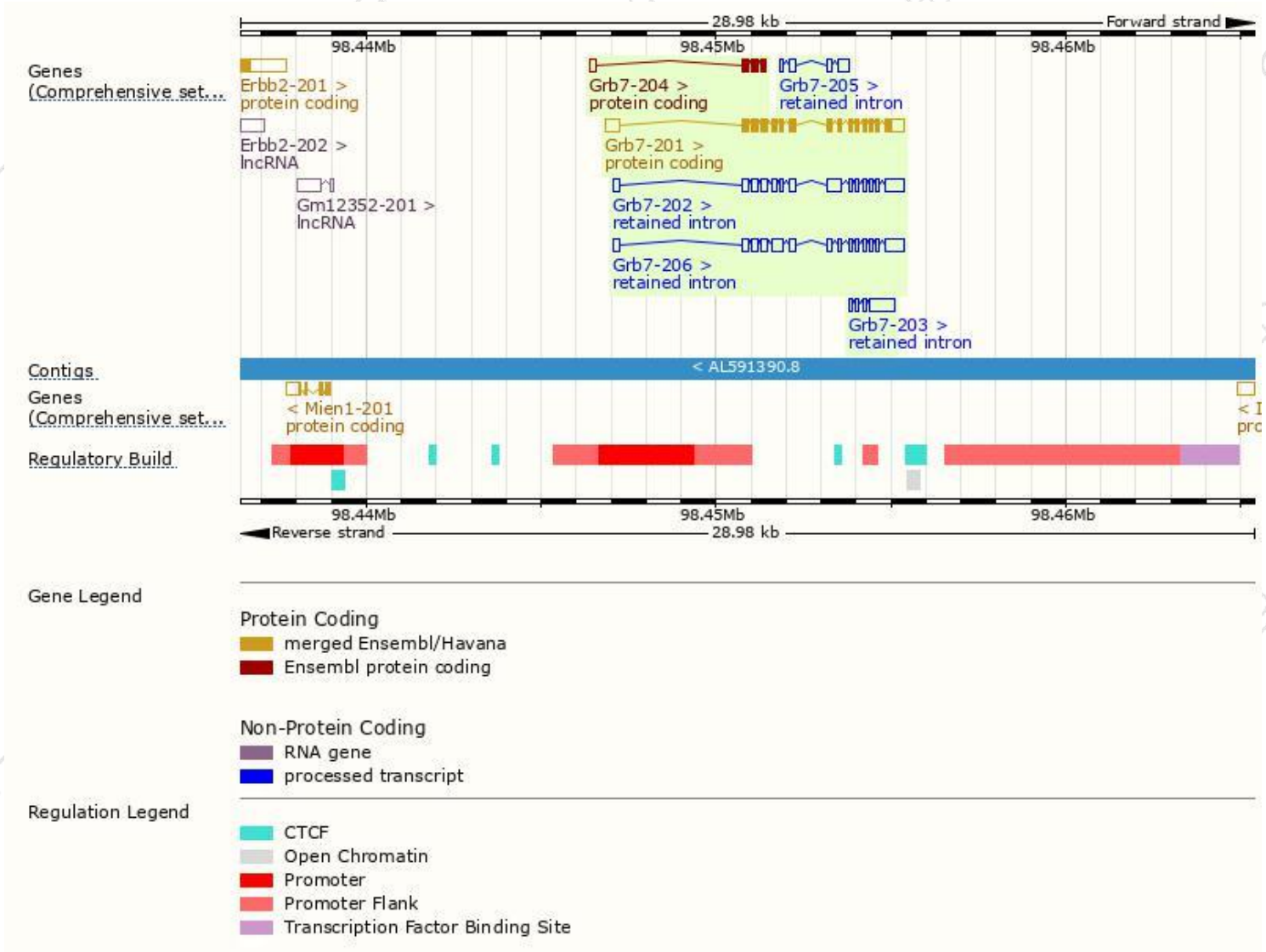
The gene has 6 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Grb7-201	ENSMUST00000019456.4	2397	535aa	Protein coding	CCDS25351	Q03160	TSL:1 GENCODE basic APPRIS P1
Grb7-204	ENSMUST00000132771.7	582	138aa	Protein coding	-	A2A555	CDS 3' incomplete TSL:3
Grb7-202	ENSMUST00000127914.7	2386	No protein	Retained intron	-	-	TSL:2
Grb7-206	ENSMUST00000156328.7	2288	No protein	Retained intron	-	-	TSL:2
Grb7-203	ENSMUST00000129034.1	991	No protein	Retained intron	-	-	TSL:3
Grb7-205	ENSMUST00000133419.1	667	No protein	Retained intron	-	-	TSL:3

The strategy is based on the design of *Grb7-201* transcript,The transcription is shown below

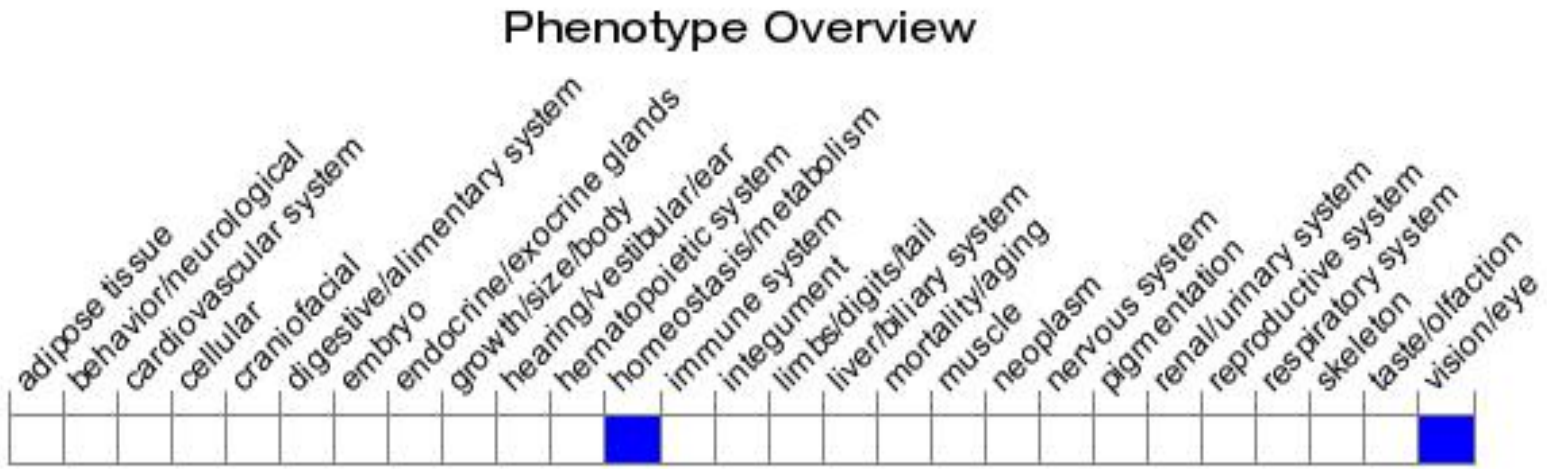


Genomic location distribution



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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