Rbp1 Cas9-KO Strategy

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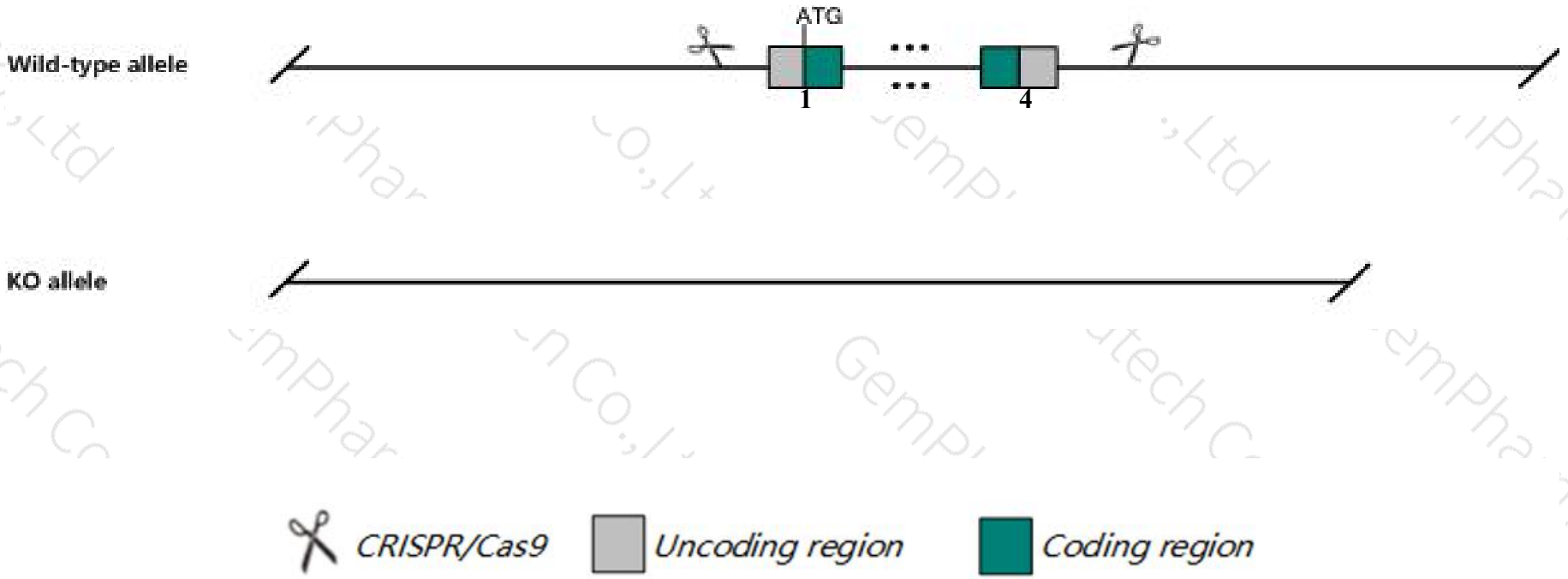
Project Overview

Project Name	***Rbp1***
Project type	**Cas9-KO**
Strain background	**C57BL/6JGpt**

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Rbp1* gene. The schematic diagram is as follows:



Technical routes

➢ The *Rbp1* gene has 1 transcript. According to the structure of *Rbp1* gene, exon1-exon4 of *Rbp1-201* (ENSMUST00000052068.10) 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 *Rbp1* gene. The brief process is as follows: CRISPR/Cas9 system

Notice

- According to the existing MGI data,Homozygotes for a targeted null mutation show increased susceptibility to a diet deficient in vitamin A. Mutants also exhibit a two-fold delay in dark adaptation after a photic flash.

- The *Rbp1* gene is located on the Chr9. 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）

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Rbp1 retinol binding protein 1, cellular [*Mus musculus* (house mouse)]

Gene ID: 19659, updated on 12-Aug-2019

Summary

Official Symbol	Rbp1 provided by MGI
Official Full Name	retinol binding protein 1, cellular provided by MGI
Primary source	MGI:MGI:97876
See related	Ensembl:ENSMUSG00000046402
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
Also known as	Crbp; CRBPI; Rbp-1
Expression	Broad expression in placenta adult (RPKM 52.2), liver E18 (RPKM 35.5) and 18 other tissues See more
Orthologs	human all

Genomic context

Location: 9 E3.3; 9 51.36 cM

See Rbp1 in Genome Data Viewer

Exon count: 4

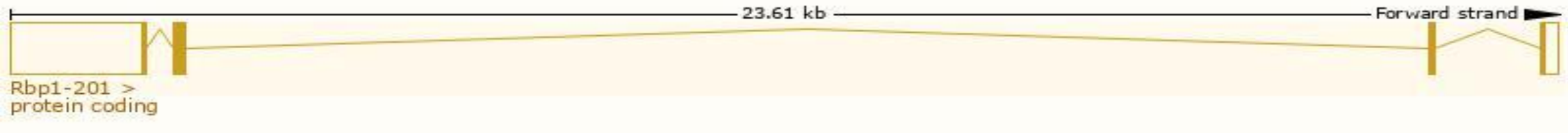
Annotation release	Status	Assembly	Chr	Location
108	current	GRCm38.p6 (GCF_000001635.26)	9	NC_000075.6 (98422961..98446551)
Build 37.2	previous assembly	MGSCv37 (GCF_000001635.18)	9	NC_000075.5 (98323380..98346970)

Transcript information（Ensembl）

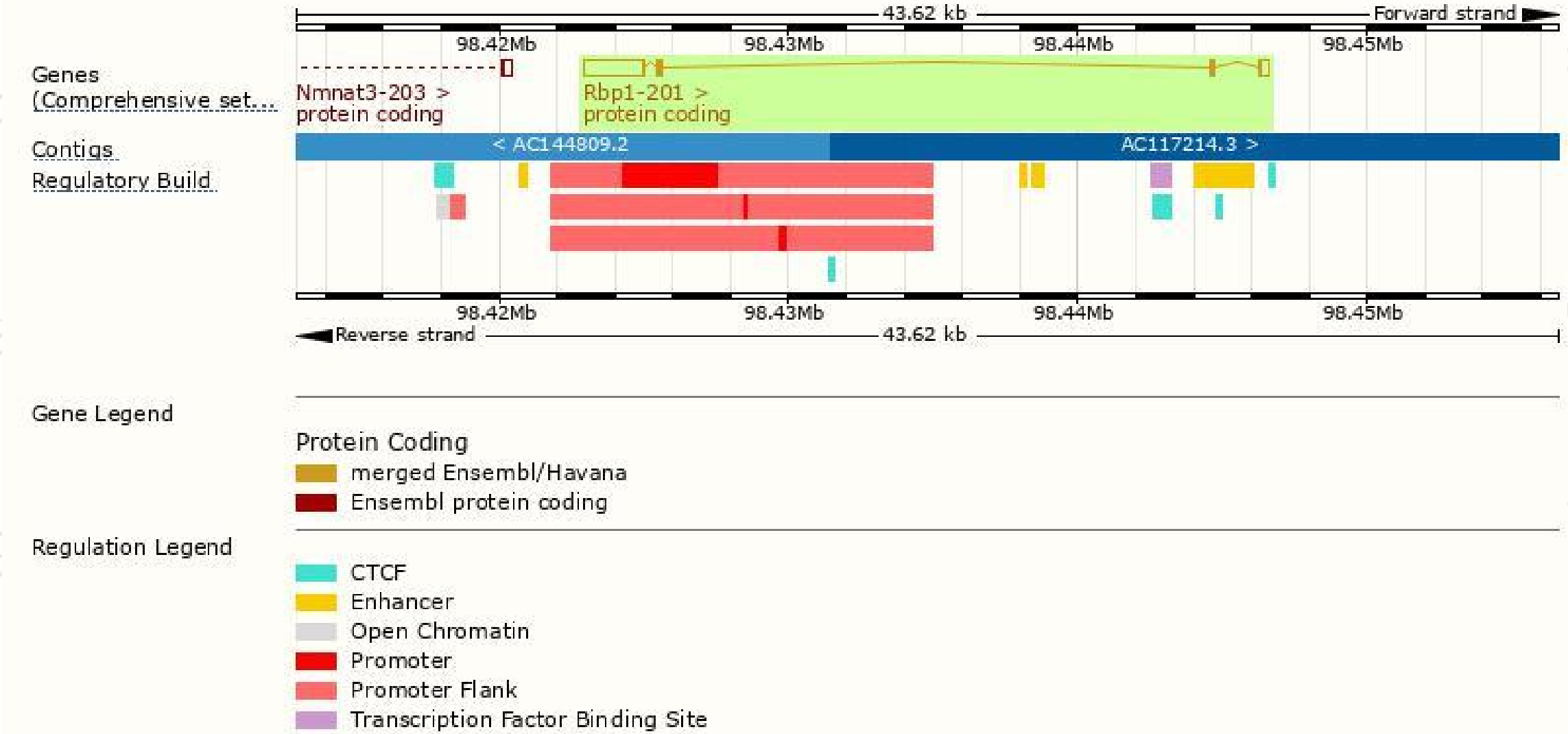
The gene has 1 transcript,and the transcript is shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Rbp1-201	ENSMUST00000052068.10	2652	135aa	Protein coding	CCDS23424	Q00915 Q58EU7	TSL:1 GENCODE basic APPRIS P1

The strategy is based on the design of *Rbp1-201* transcript,The transcription is shown below

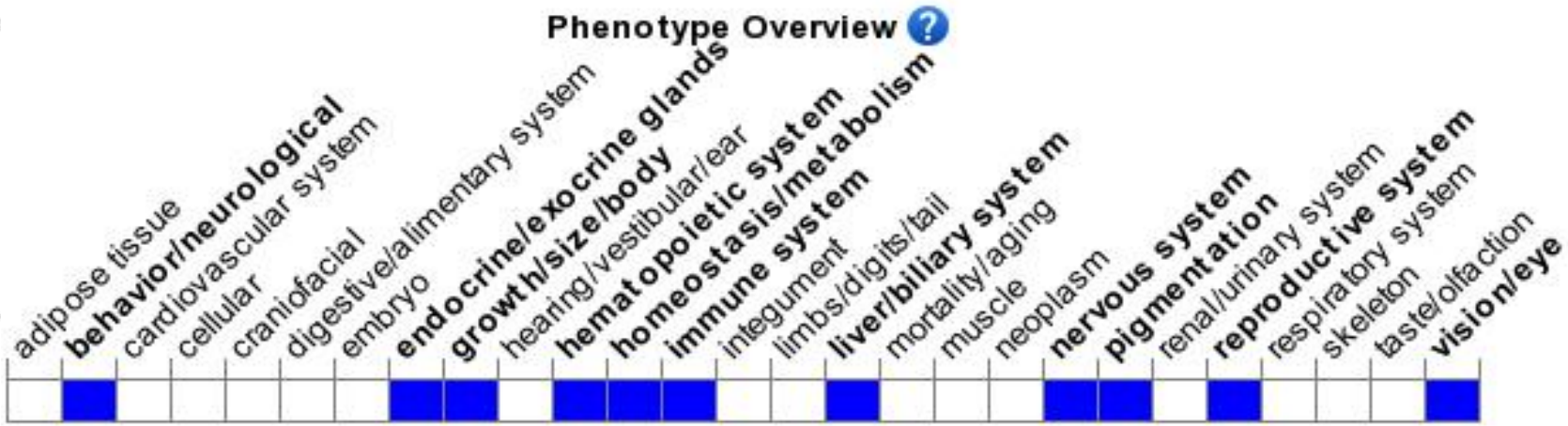


Genomic location distribution



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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