Epb41l4a Cas9-KO Strategy

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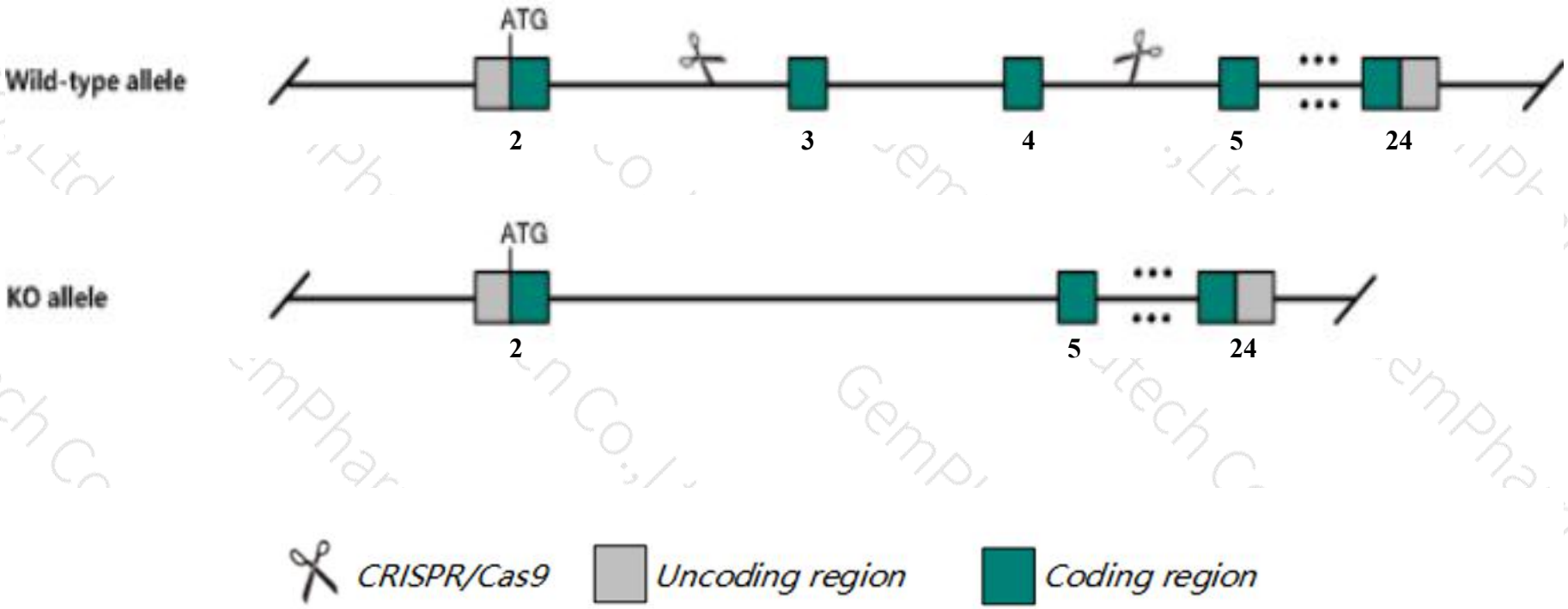
Project Overview

Project Name	***Epb41l4a***
Project type	**Cas9-KO**
Strain background	**C57BL/6JGpt**

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Epb41l4a* gene. The schematic diagram is as follows:



Technical routes

➢ The *Epb41l4a* gene has 7 transcripts. According to the structure of *Epb41l4a* gene, exon3-exon4 of *Epb41l4a-201*(ENSMUST00000025234.6) transcript is recommended as the knockout region.The region contains 157bp coding sequence. Knock out the region will result in disruption of protein function.

➢ In this project we use CRISPR/Cas9 technology to modify *Epb41l4a* gene. The brief process is as follows: CRISPR/Cas9 system 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

➢ The *Epb41l4a* gene is located on the Chr18. 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.

➢ Transcript *Epb41l4a*-203&205&206&207 may not be affected.

➢ 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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Epb41l4a erythrocyte membrane protein band 4.1 like 4a [Mus musculus (house mouse)]

Gene ID: 13824, updated on 13-Mar-2020

Summary

Official Symbol	Epb41l4a provided by MGI
Official Full Name	erythrocyte membrane protein band 4.1 like 4a provided byMGI
Primary source	MGI:MGI:103007
See related	Ensembl:ENSMUSG00000024376
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	Epb4.1l4, Epb4.1l4a, NBL4
Expression	Broad expression in CNS E11.5 (RPKM 2.9), whole brain E14.5 (RPKM 2.8) and 23 other tissuesSee more
Orthologs	human all

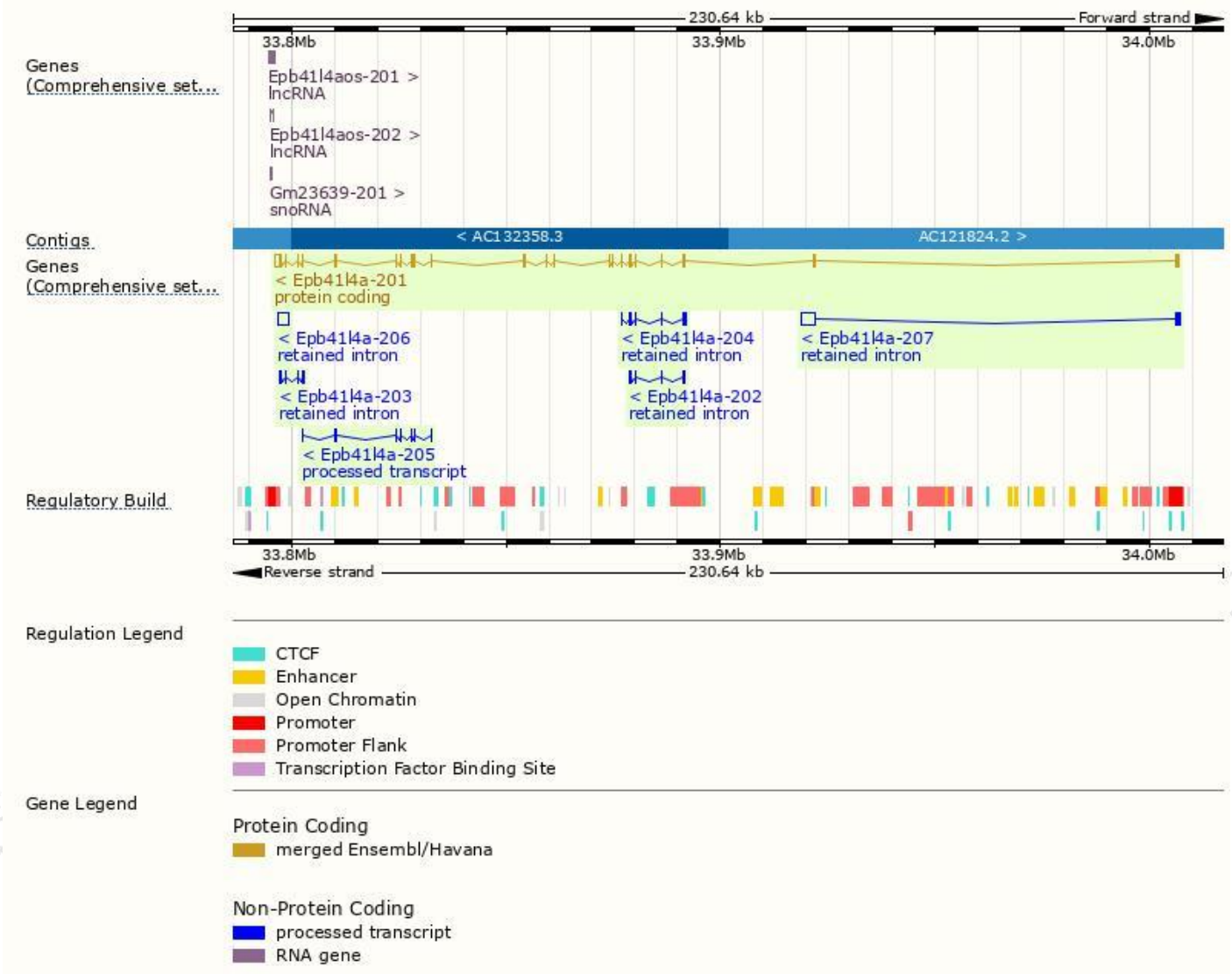
Transcript information（Ensembl）

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

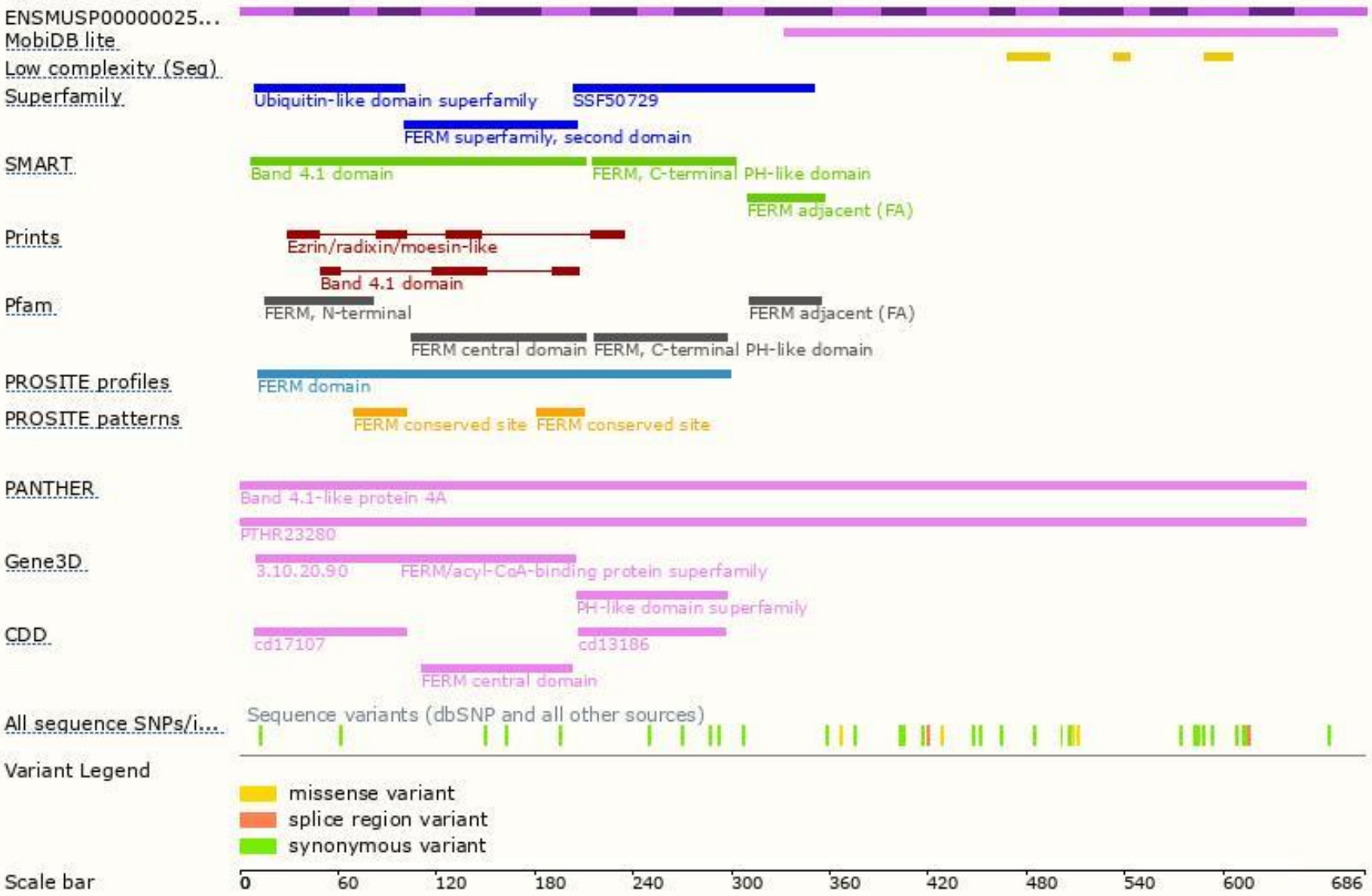
Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Epb41l4a-201	ENSMUST00000025234.6	3566	686aa	Protein coding	CCDS29124	P52963	TSL:1 GENCODE basic APPRIS is a system to annotate alternatively spliced transcripts based on a range of computational methods to identify the most functionally important transcript(s) of a gene. APPRIS P1
Epb41l4a-205	ENSMUST00000236514.1	529	No protein	Processed transcript	-	-	
Epb41l4a-207	ENSMUST00000237971.1	3777	No protein	Retained intron	-	-	
Epb41l4a-206	ENSMUST00000236716.1	2286	No protein	Retained intron	-	-	
Epb41l4a-203	ENSMUST00000235393.1	928	No protein	Retained intron	-	-	
Epb41l4a-204	ENSMUST00000235876.1	540	No protein	Retained intron	-	-	
Epb41l4a-202	ENSMUST00000235242.1	487	No protein	Retained intron	-	-	

The strategy is based on the design of *Epb41l4a-201* transcript,the transcription is shown below:

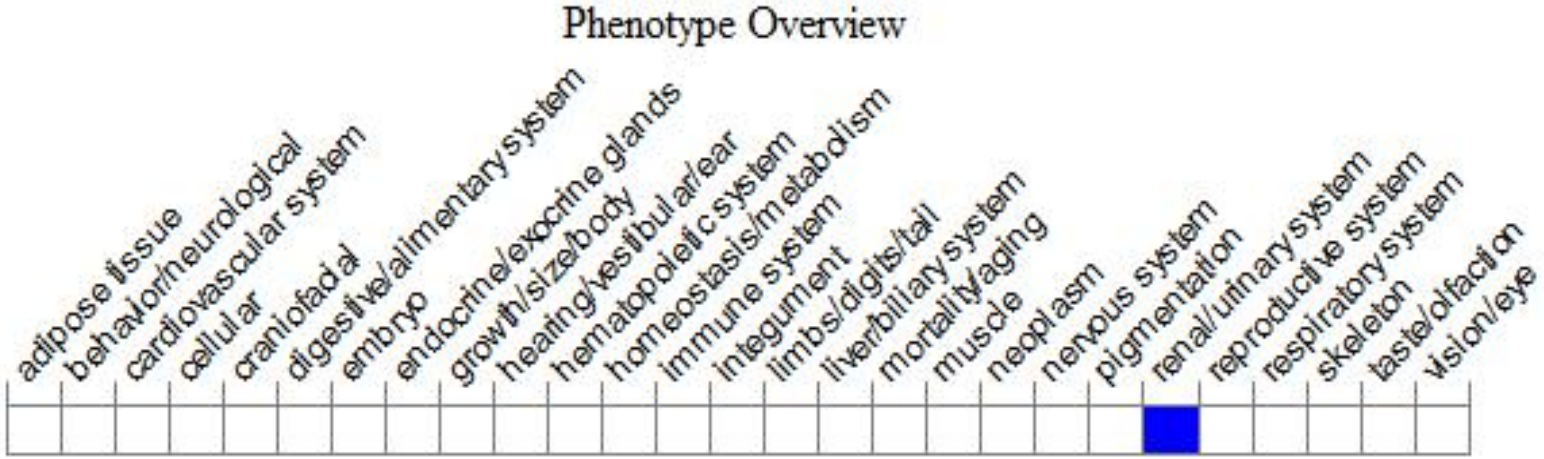
Genomic location distribution



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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