

***Epb41l5* Cas9-KO Strategy**

Designer: JiaYu

Reviewer: Xiaojing Li

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Project Overview

Project Name

Epb41l5

Project type

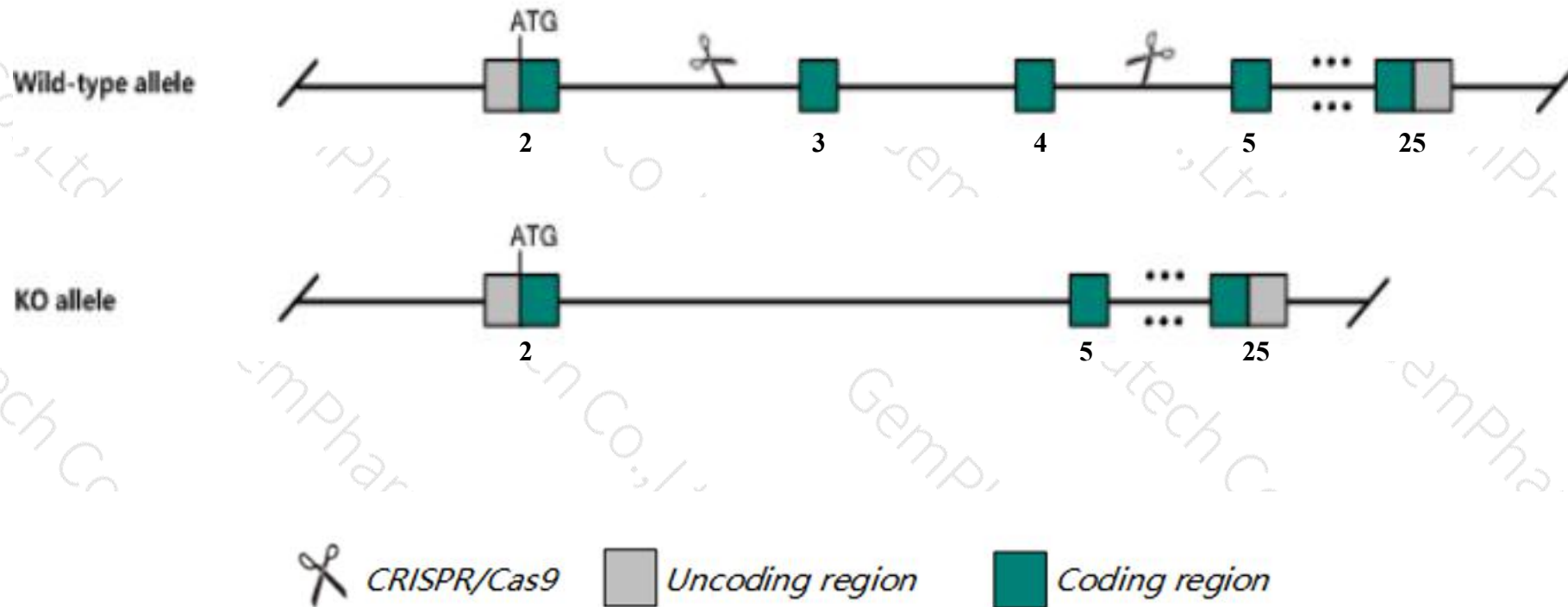
Cas9-KO

Strain background

C57BL/6JGpt

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Epb41l5* gene. The schematic diagram is as follows:



- The *Epb41l5* gene has 9 transcripts. According to the structure of *Epb41l5* gene, exon3-exon4 of *Epb41l5*-202(ENSMUST00000052404.12) transcript is recommended as the knockout region. The region contains 148bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Epb41l5* 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.

- According to the existing MGI data, mice homozygous for a number of different mutations exhibit prenatal lethality and mesodermal and epithelial-mesenchymal transition defects during gastrulation.
- The flox region contains the Gm37219 gene, which may delete it after Cre.
- The *Epb41l5* gene is located on the Chr1. 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)

Epb41l5 erythrocyte membrane protein band 4.1 like 5 [Mus musculus (house mouse)]

Gene ID: 226352, updated on 13-Mar-2020

Summary



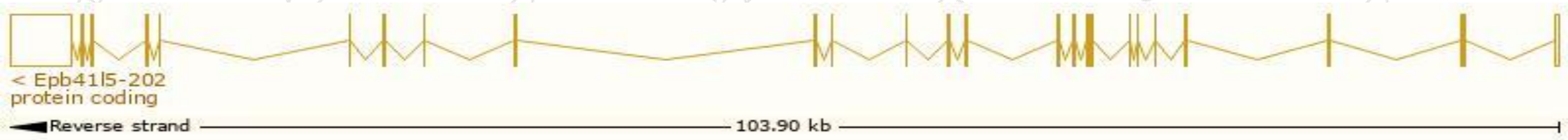
Official Symbol	Epb41l5 provided by MGI
Official Full Name	erythrocyte membrane protein band 4.1 like 5 provided by MGI
Primary source	MGI:MGI:103006
See related	Ensembl:ENSMUSG00000026383
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	1700030C16Rik, AL022914, BE37, E230025E14Rik, Epb4.1l5, Lulu1, NBL5
Expression	Ubiquitous expression in kidney adult (RPKM 3.5), placenta adult (RPKM 3.3) and 26 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

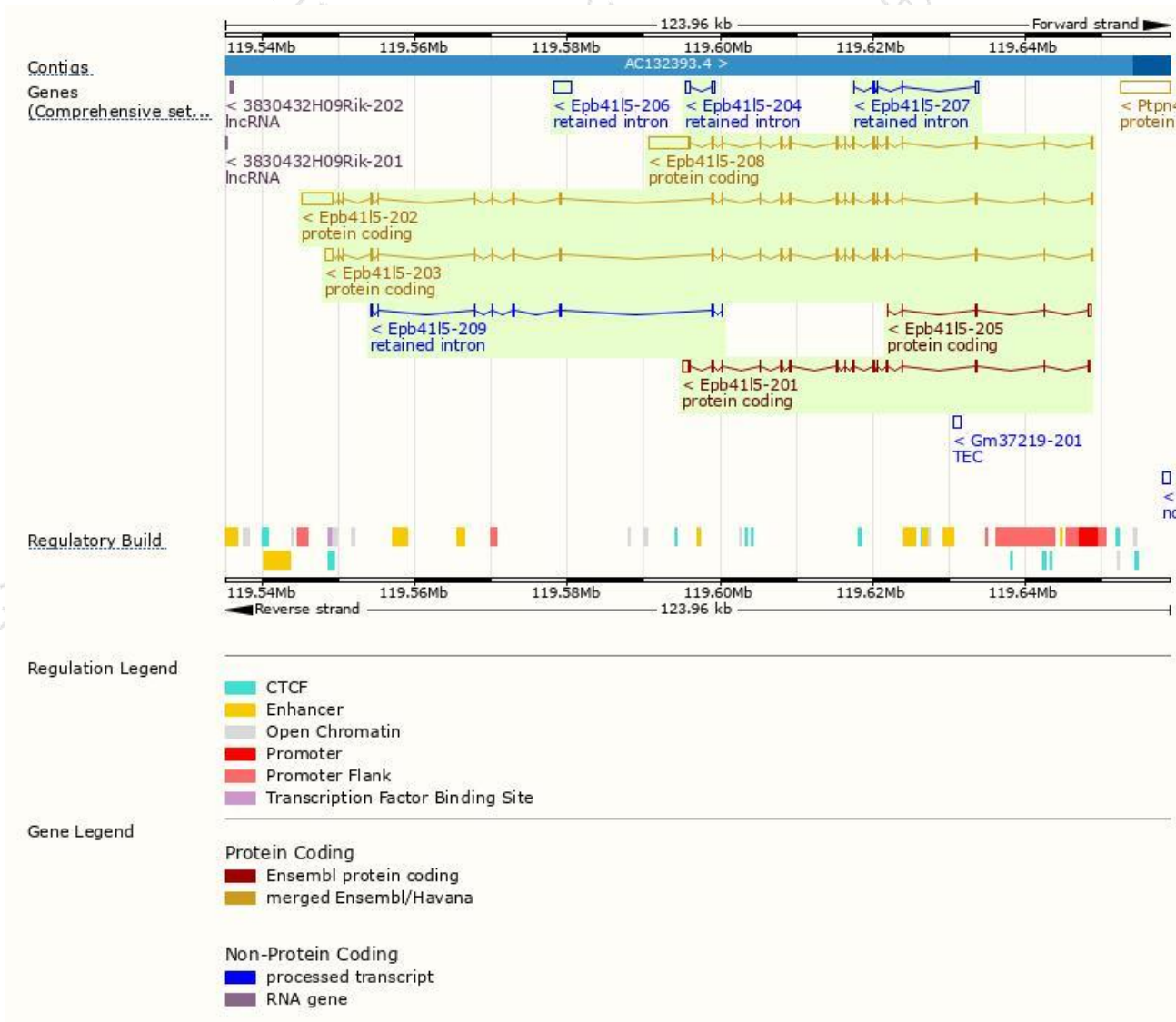
The gene has 9 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Epb41l5-208	ENSMUST00000191046.6	6870	504aa	Protein coding	CCDS48339	Q8BGS1	TSL:1 GENCODE basic APPRIS P1
Epb41l5-202	ENSMUST00000052404.12	6442	731aa	Protein coding	CCDS15226	Q8BGS1	TSL:1 GENCODE basic
Epb41l5-201	ENSMUST00000027632.13	2523	504aa	Protein coding	CCDS48339	Q8BGS1	TSL:1 GENCODE basic APPRIS P1
Epb41l5-203	ENSMUST00000163147.7	3370	739aa	Protein coding	-	Q8BGS1	TSL:1 GENCODE basic
Epb41l5-205	ENSMUST00000187194.1	615	114aa	Protein coding	-	A0A087WP93	CDS 3' incomplete TSL:5
Epb41l5-206	ENSMUST00000187239.1	2288	No protein	Retained intron	-	-	TSL:NA
Epb41l5-204	ENSMUST00000185467.1	854	No protein	Retained intron	-	-	TSL:1
Epb41l5-209	ENSMUST00000191162.1	825	No protein	Retained intron	-	-	TSL:5
Epb41l5-207	ENSMUST00000189042.1	617	No protein	Retained intron	-	-	TSL:5

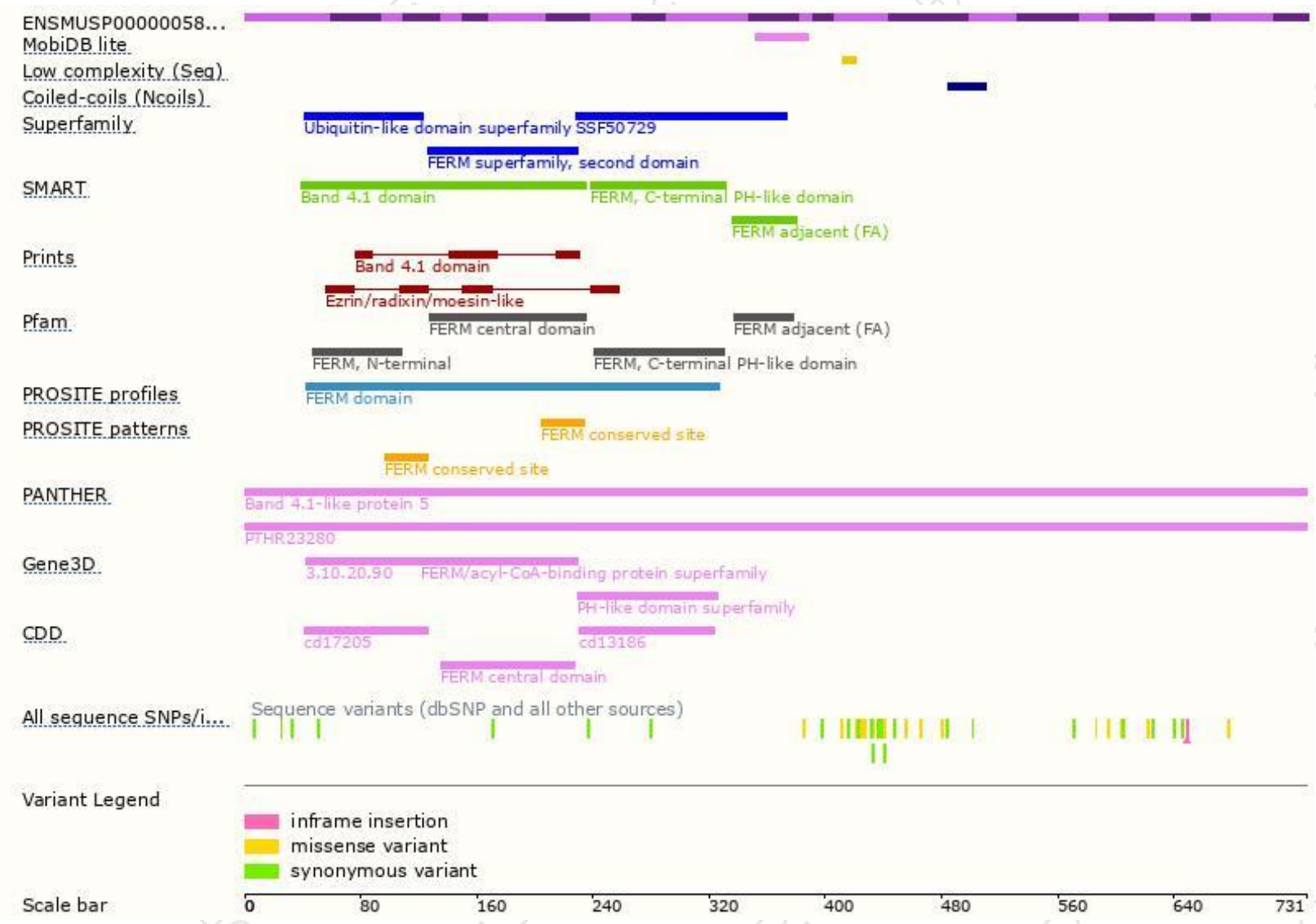
The strategy is based on the design of *Epb41l5-202* transcript,the transcription is shown below:



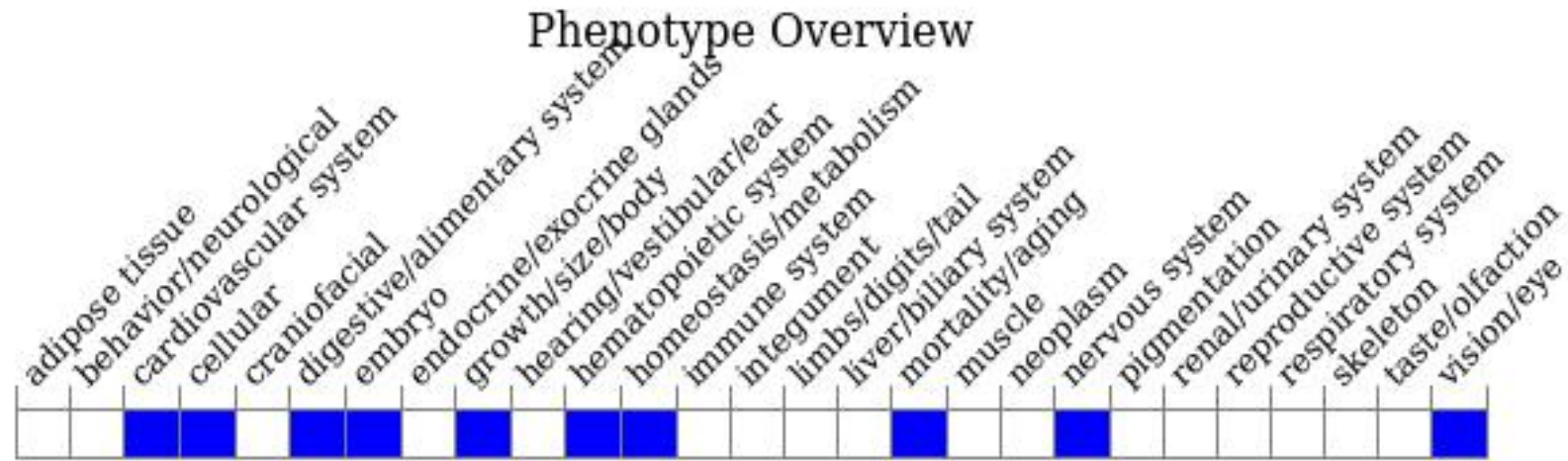
Genomic location distribution



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/>).

According to the existing MGI data, mice homozygous for a number of different mutations exhibit prenatal lethality and mesodermal and epithelial-mesenchymal transition defects during gastrulation.

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

Tel: 400-9660890

