

Polr1b Cas9-CKO Strategy

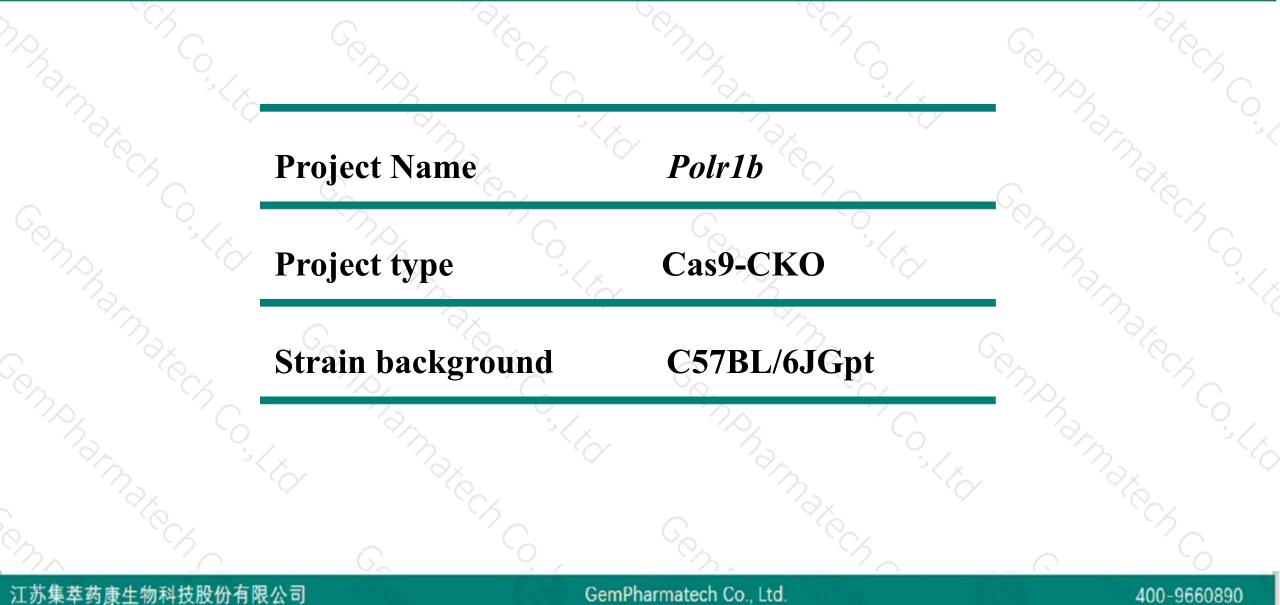
Designer: Reviewer:

Design Date:

Daohua Xu Huimin Su 2019-11-22

Project Overview



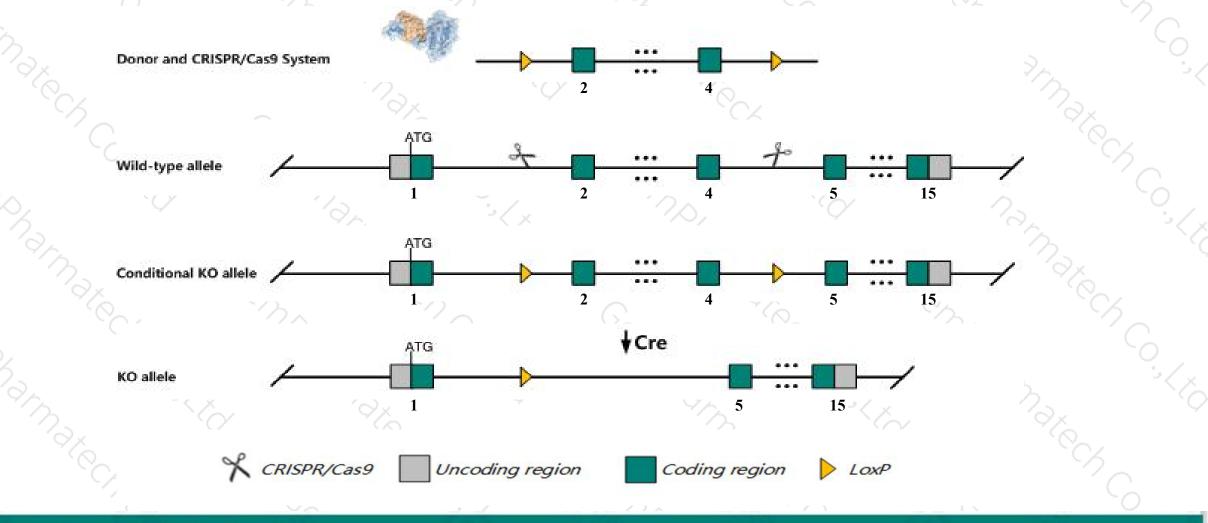


Conditional Knockout strategy



400-9660890

This model will use CRISPR/Cas9 technology to edit the *Polr1b* gene. The schematic diagram is as follows:



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The Polr1b gene has 5 transcripts. According to the structure of Polr1b gene, exon2-exon4 of Polr1b-202 (ENSMUST00000103205.10) transcript is recommended as the knockout region. The region contains 448bp coding sequence. Knock out the region will result in disruption of protein function.

In this project we use CRISPR/Cas9 technology to modify *Polr1b* 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



- According to the existing MGI data, Mice homozygous for a gene trapped allele exhibit embryonic lethality prior to implantation.
- The *Polr1b* gene is located on the Chr2. 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)



\$?

Polr1b polymerase (RNA) I polypeptide B [Mus musculus (house mouse)]

Gene ID: 20017, updated on 31-Jan-2019

Summary

| Official Symbol | Polr1b provided by MGI |
|---------------------------|--|
| Official Full Name | polymerase (RNA) I polypeptide B provided by MGI |
| Primary source | MGI:MGI:108014 |
| See related | Ensembl:ENSMUSG0000027395 |
| 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 | 128kDa, D630020H17Rik, RPA116, RPA135, RPA2, Rpo1-2 |
| Expression | Ubiquitous expression in limb E14.5 (RPKM 5.9), CNS E11.5 (RPKM 5.4) and 28 other tissues See more |
| Orthologs | human all |

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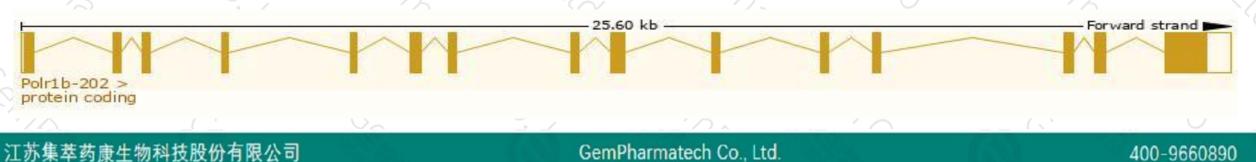
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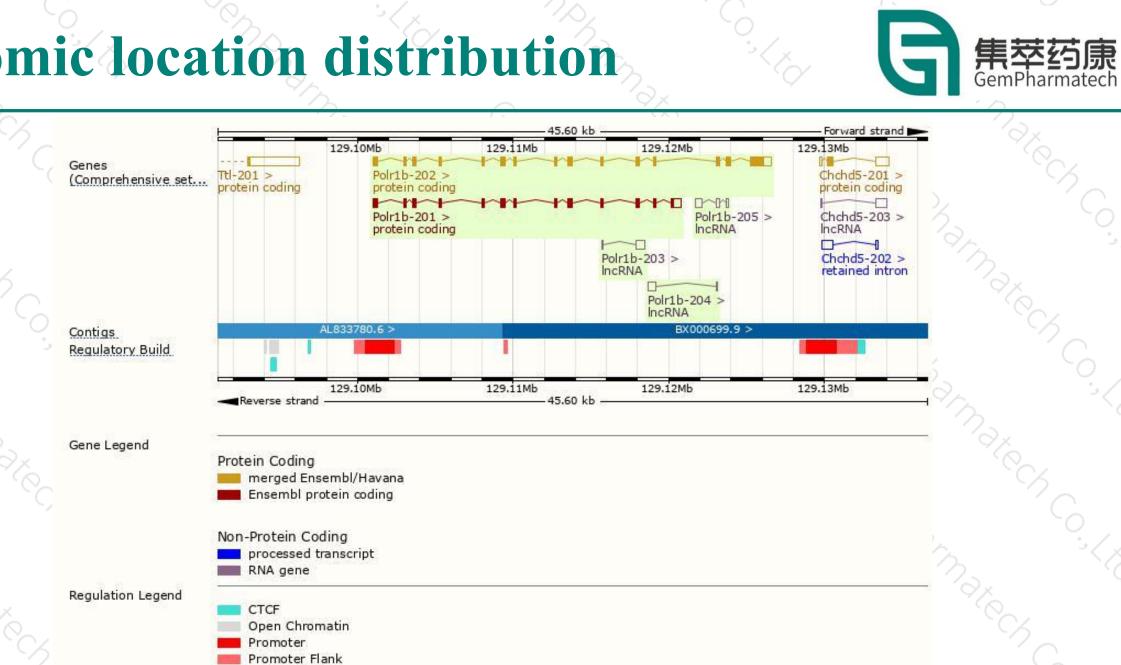
The gene has 5 transcripts, all transcripts are shown below:

| Name | Transcript ID | bp | Protein | Biotype | CCDS | UniProt | Flags | | |
|------------|-----------------------|------|---------------|----------------|----------------|---------------|-------------------------------|--|--|
| Polr1b-202 | ENSMUST00000103205.10 | 3998 | <u>1135aa</u> | Protein coding | CCDS16720 | <u>P70700</u> | TSL:1 GENCODE basic APPRIS P1 | | |
| Polr1b-201 | ENSMUST00000028874.7 | 2769 | <u>754aa</u> | Protein coding | | A2AP84 | TSL:1 GENCODE basic | | |
| Polr1b-205 | ENSMUST00000147727.1 | 720 | No protein | IncRNA | (a - 1) | ÷ | TSL:3 | | |
| Polr1b-203 | ENSMUST00000133345.1 | 663 | No protein | IncRNA | 1020 | 4 | TSL:2 | | |
| Polr1b-204 | ENSMUST00000144004.1 | 612 | No protein | IncRNA | 1270 | | TSL:2 | | |

The strategy is based on the design of *Polr1b-202* transcript, The transcription is shown below



Genomic location distribution



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Protein domain



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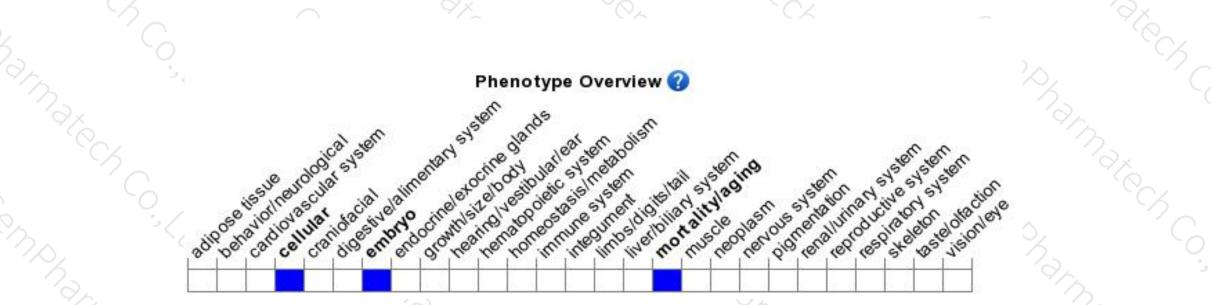
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Mouse phenotype description(MGI)





Phenotypes affected by the gene are marked in blue. Data quoted from MGI database(http://www.informatics.jax.org/).

According to the existing MGI data, Mice homozygous for a gene trapped allele exhibit embryonic lethality prior to implantation.



If you have any questions, you are welcome to inquire. Tel: 400-9660890



