

Polr2g Cas9-CKO Strategy

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Project Overview

Project Name

Polr2g

Project type

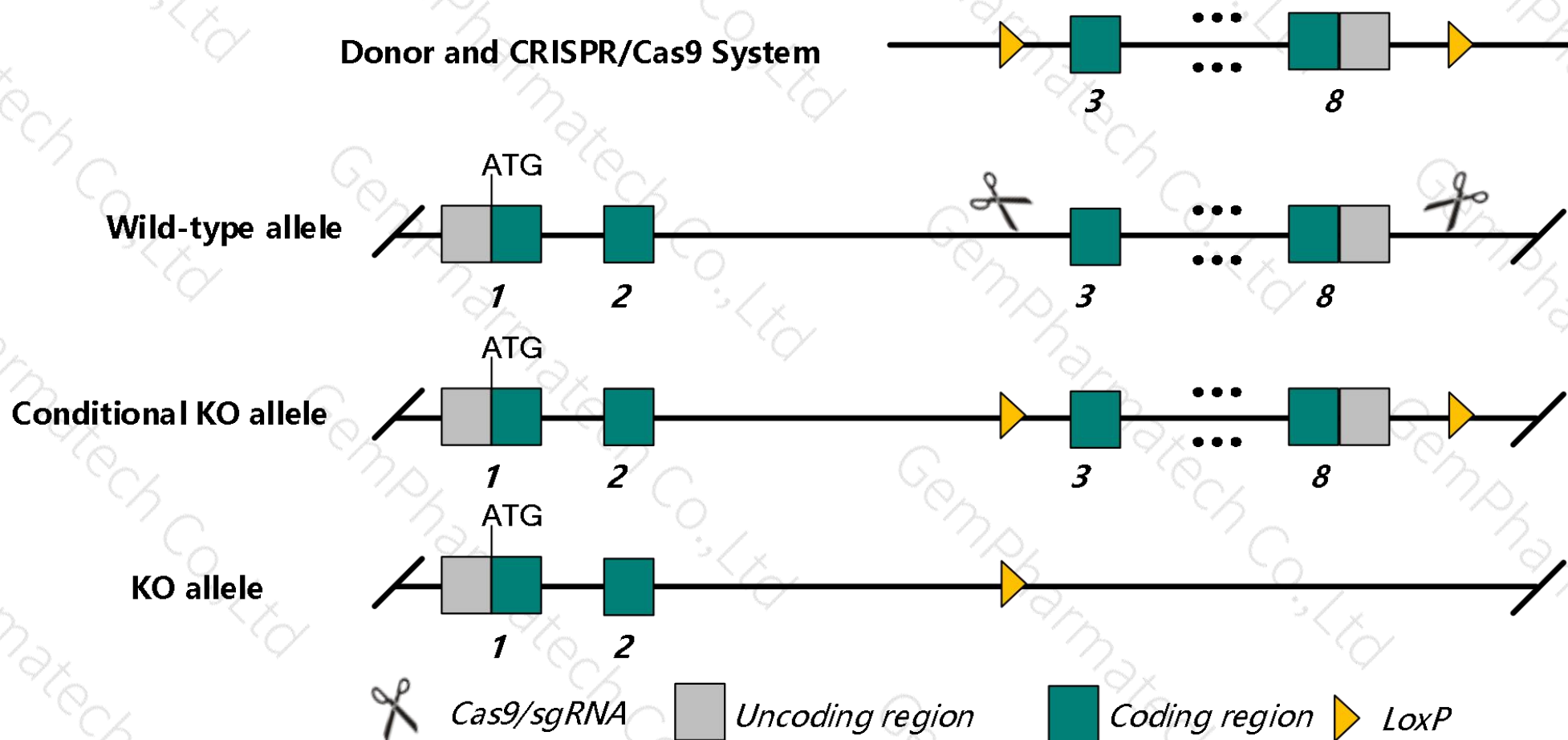
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Polr2g* gene. The schematic diagram is as follows:



- The *Polr2g* gene has 4 transcripts. According to the structure of *Polr2g* gene, exon3-exon8 of *Polr2g-201* (ENSMUST00000096261.4) transcript is recommended as the knockout region. The region contains most of coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Polr2g* gene. The brief process is as follows: gRNA was transcribed in vitro, donor was constructed. Cas9, gRNA 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.

- The floxed region is near to the N-terminal of *Gm50131* and *Zbtb3* and *Taf6l* gene, this strategy may influence the regulatory function of the N-terminal of these genes.
- Transcript *Polr2g*-203 may not be affected.
- The N-terminal of *Polr2g* gene will remain 41aa, it may remain the partial function of *Polr2g* gene.
- The *Polr2g* gene is located on the Chr19. 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)

Polr2g polymerase (RNA) II (DNA directed) polypeptide G [*Mus musculus* (house mouse)]

Gene ID: 67710, updated on 14-Aug-2019

Summary

Official Symbol Polr2g provided by [MGI](#)
Official Full Name polymerase (RNA) II (DNA directed) polypeptide G provided by [MGI](#)
Primary source [MGI:MGI:1914960](#)
See related [Ensembl:ENSMUSG00000071662](#)
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 RBP7; C76415; Rpo2-7l; 2410046K11Rik; A230108L04Rik
Expression Ubiquitous expression in CNS E11.5 (RPKM 43.0), placenta adult (RPKM 41.9) and 28 other tissues [See more](#)
Orthologs [human](#) [all](#)

Genomic context

Location: 19; 19 A

See Polr2g in [Genome Data Viewer](#)

Exon count: 8

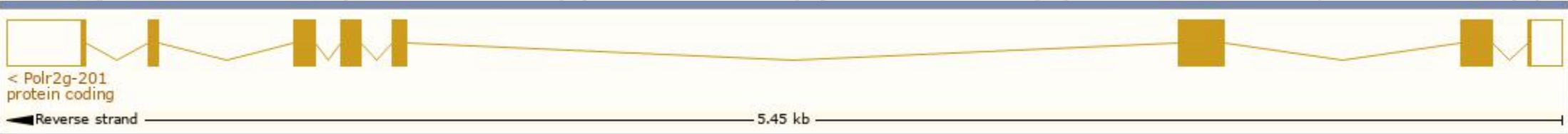
Annotation release	Status	Assembly	Chr	Location
108	current	GRCm38.p6 (GCF_000001635.26)	19	NC_000085.6 (8793129..8798557, complement)
Build 37.2	previous assembly	MGSCv37 (GCF_000001635.18)	19	NC_000085.5 (8867619..8873047, complement)

Transcript information (Ensembl)

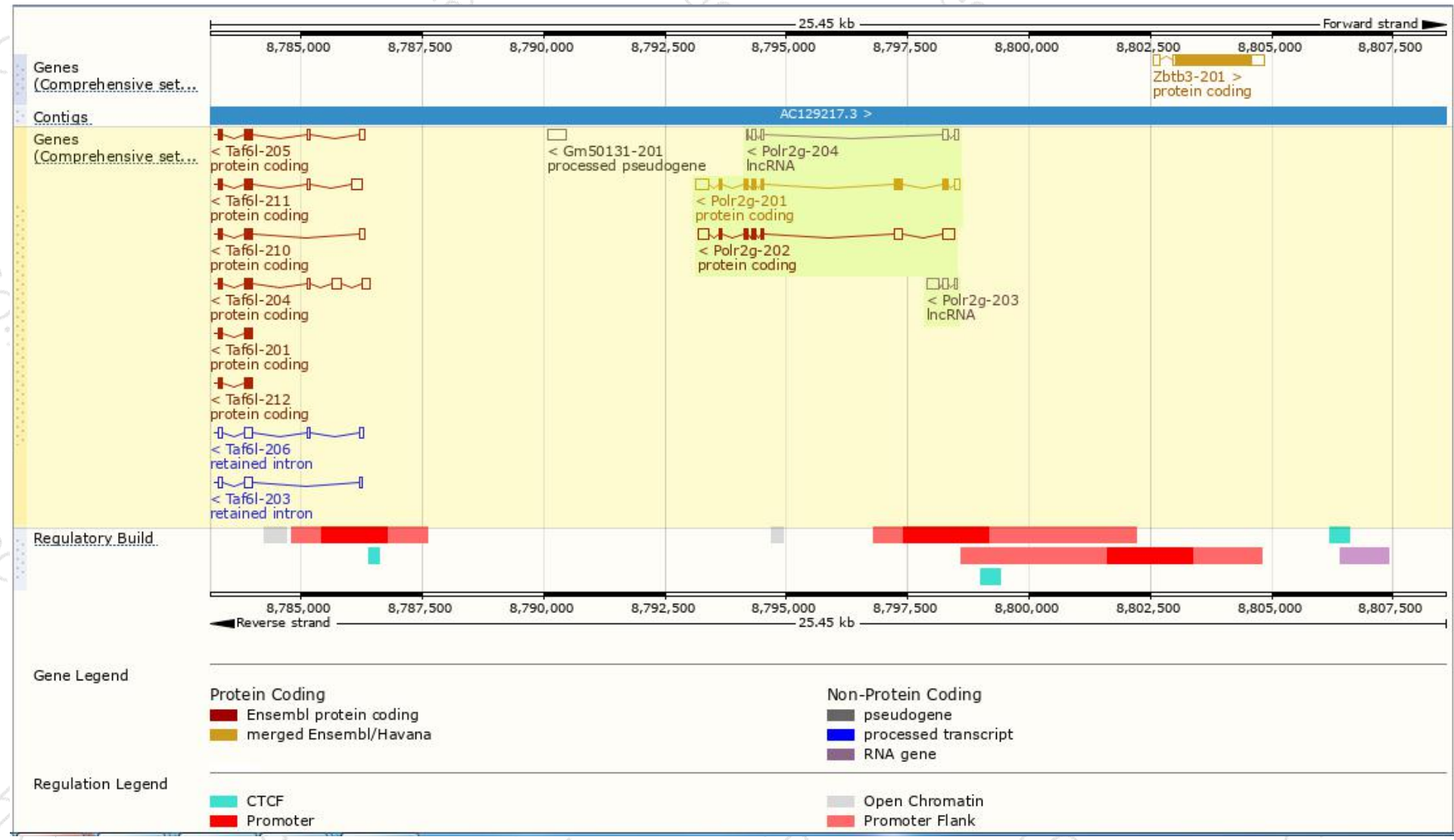
The gene has 4 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Polr2g-201	ENSMUST00000096261.4	890	172aa	Protein coding	CCDS29547	P62488	TSL:1 GENCODE basic APPRIS P1
Polr2g-202	ENSMUST00000235964.1	833	69aa	Protein coding	-	A0A494BAJ9	GENCODE basic
Polr2g-203	ENSMUST00000236566.1	414	No protein	lncRNA	-	-	-
Polr2g-204	ENSMUST00000237207.1	342	No protein	lncRNA	-	-	-

The strategy is based on the design of *Polr2g-201* transcript,The transcription is shown below



Genomic location distribution



Protein domain



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

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