Polr2g Cas9-KO Strategy

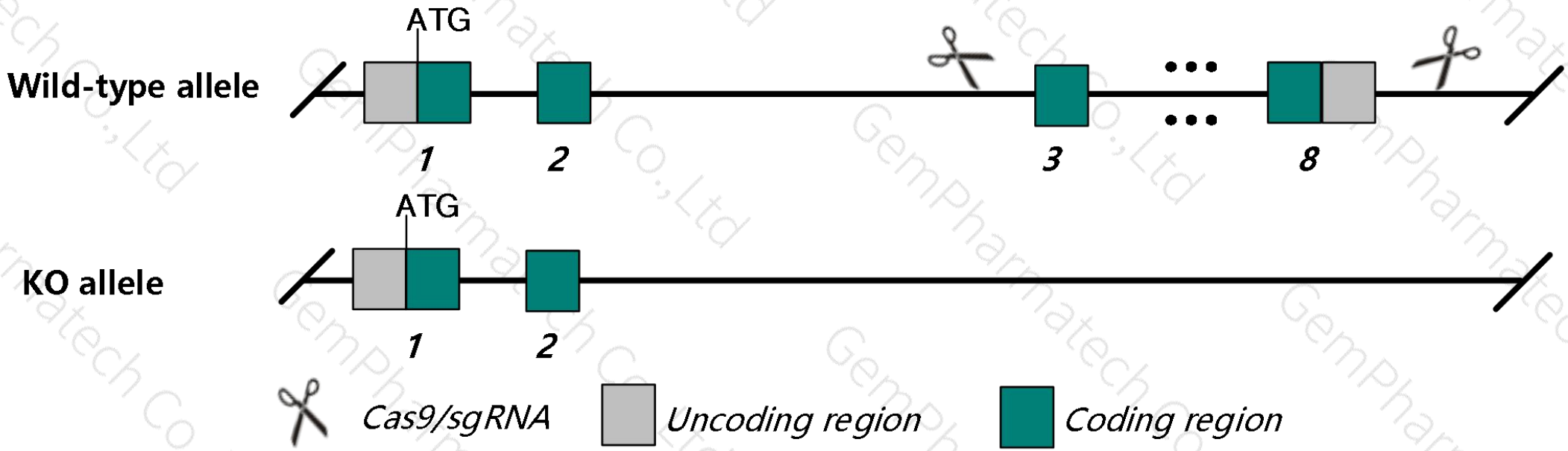
Designer:Xueting Zhang
Reviewer:Yanhua Shen
Design Date:2019-10-14

Project Overview

Project Name	***Polr2g***
Project type	**Cas9-KO**
Strain background	**C57BL/6JGpt**

Knockout strategy

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



Technical routes

➢ 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 the 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.Cas9 and gRNA 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 knockout 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 the gene knockout on gene transcription, RNA splicing and protein translation cannot be predicted at the existing technology level.

Gene information （NCBI）

集萃药康 GemPharmatech

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

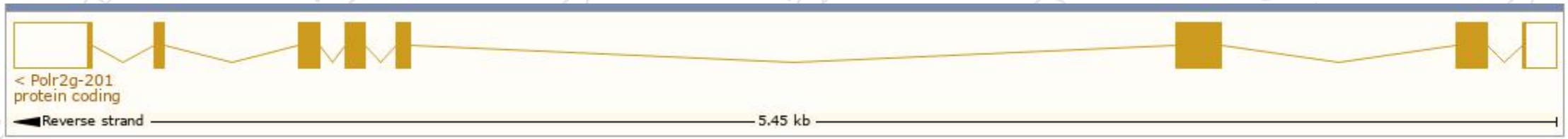
Annotation release	Status	Assembly	Chr	Location
108	current	GRCm38.p6 (GCF_000001635.26)	19	NC_000085.6 (8793129..8798557, complement)
Build 37.2	previous assembly	MGSCv37 (GCF_000001635.18)	19	NC_000085.5 (8867619..8873047, complement)

Transcript information（Ensembl）

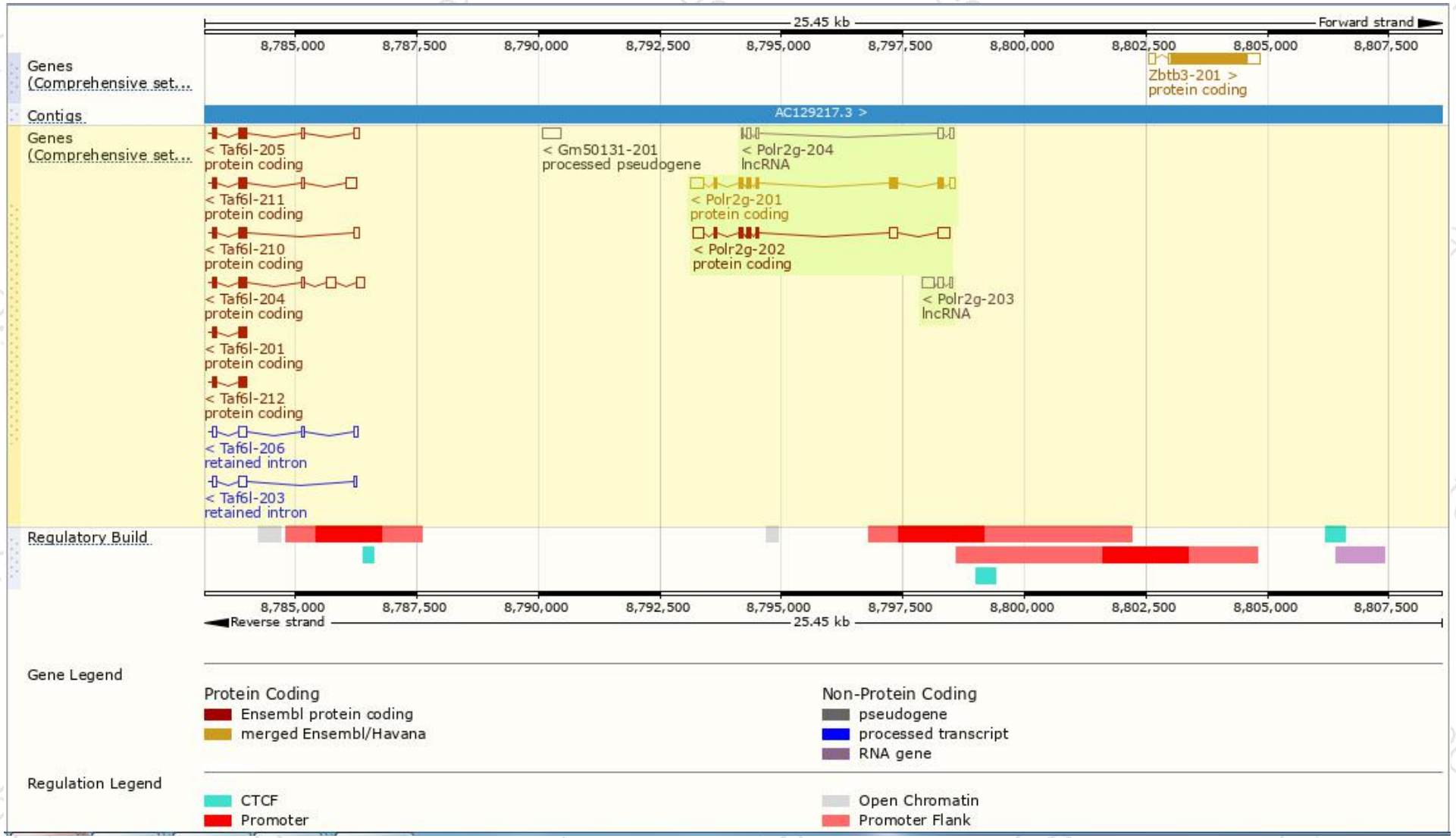
The gene has 4 transcripts,all transcripts are shown below:

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

集萃药康
GemPharmatech

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

Tel: 400-9660890

集萃药康生物科技
GemPharmatech Co.,Ltd