Polr2m Cas9-CKO Strategy

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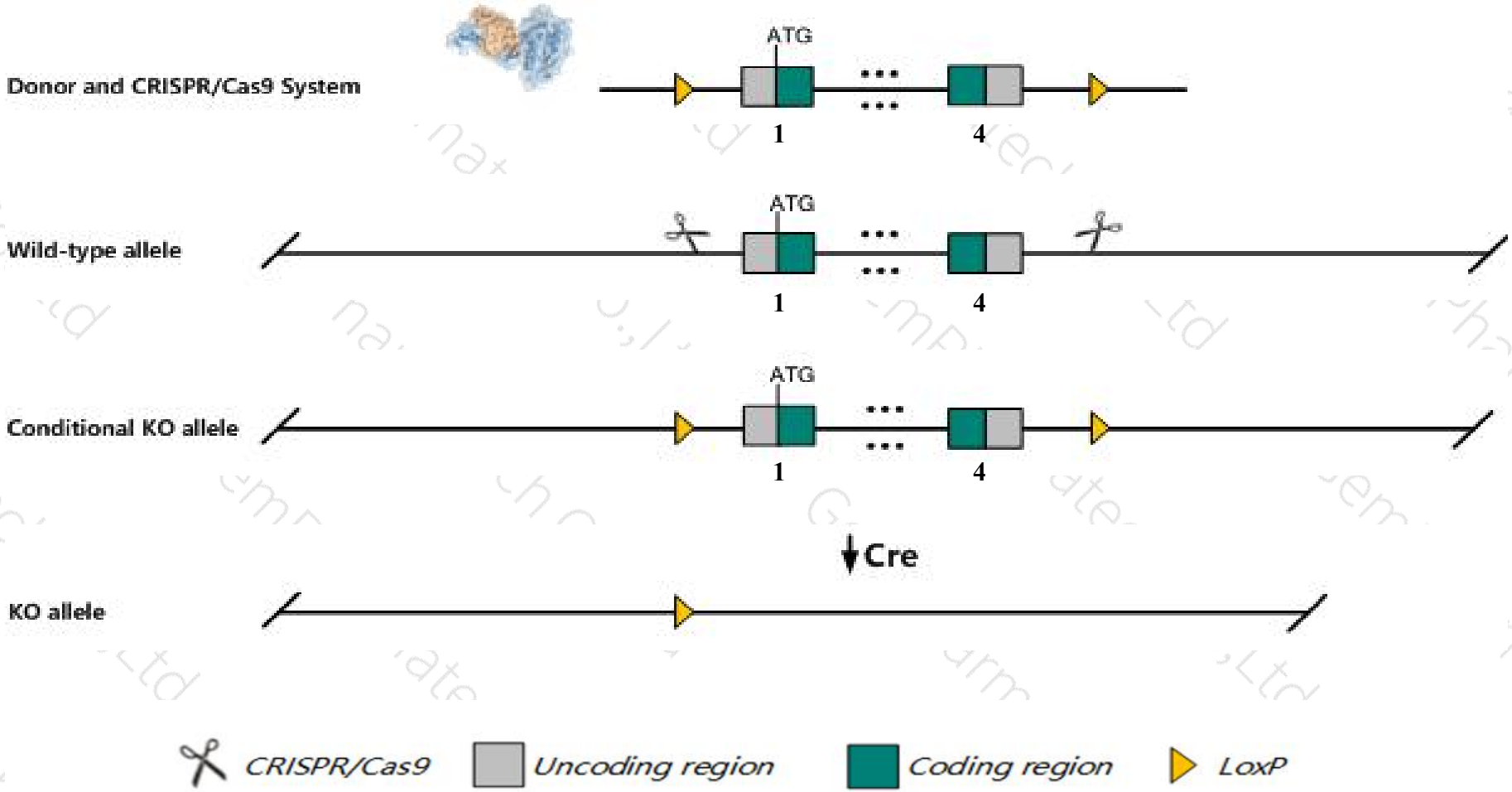
Project Overview

Project Name	***Polr2m***
Project type	**Cas9-CKO**
Strain background	**C57BL/6JGpt**

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Polr2m* gene. The schematic diagram is as follows:



Technical routes

- The *Polr2m* gene has 4 transcripts. According to the structure of *Polr2m* gene, exon1-exon4 of *Polr2m-201* (ENSMUST00000034720.11) transcript is recommended as the knockout region.The region contains all 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 *Polr2m* 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

➢ The *Polr2m* gene is located on the Chr9. 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）

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Polr2m polymerase (RNA) II (DNA directed) polypeptide M [*Mus musculus* (house mouse)]

Gene ID: 28015, updated on 10-Oct-2019

Summary

Official Symbol	Polr2m provided by MGI
Official Full Name	polymerase (RNA) II (DNA directed) polypeptide M provided by MGI
Primary source	MGI:MGI:107282
See related	Ensembl:ENSMUSG00000032199
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	Grinl1a; AA407243; AA408799; AI303746; AW553238; D9Wsu138e; mKIAA4185
Expression	Ubiquitous expression in CNS E11.5 (RPKM 79.8), limb E14.5 (RPKM 68.7) and 28 other tissues See more
Orthologs	human all

Genomic context

Location: 9 D; 9 39.85 cM

See Polr2m in Genome Data Viewer

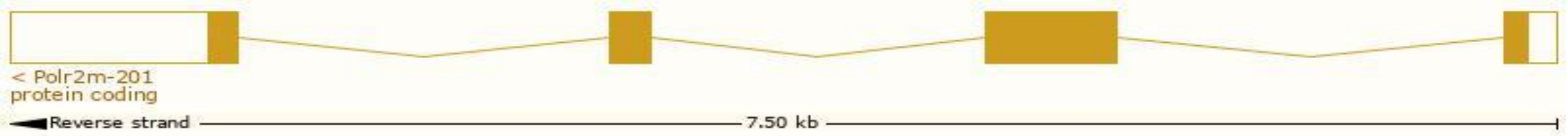
Exon count: 5

Transcript information（Ensembl）

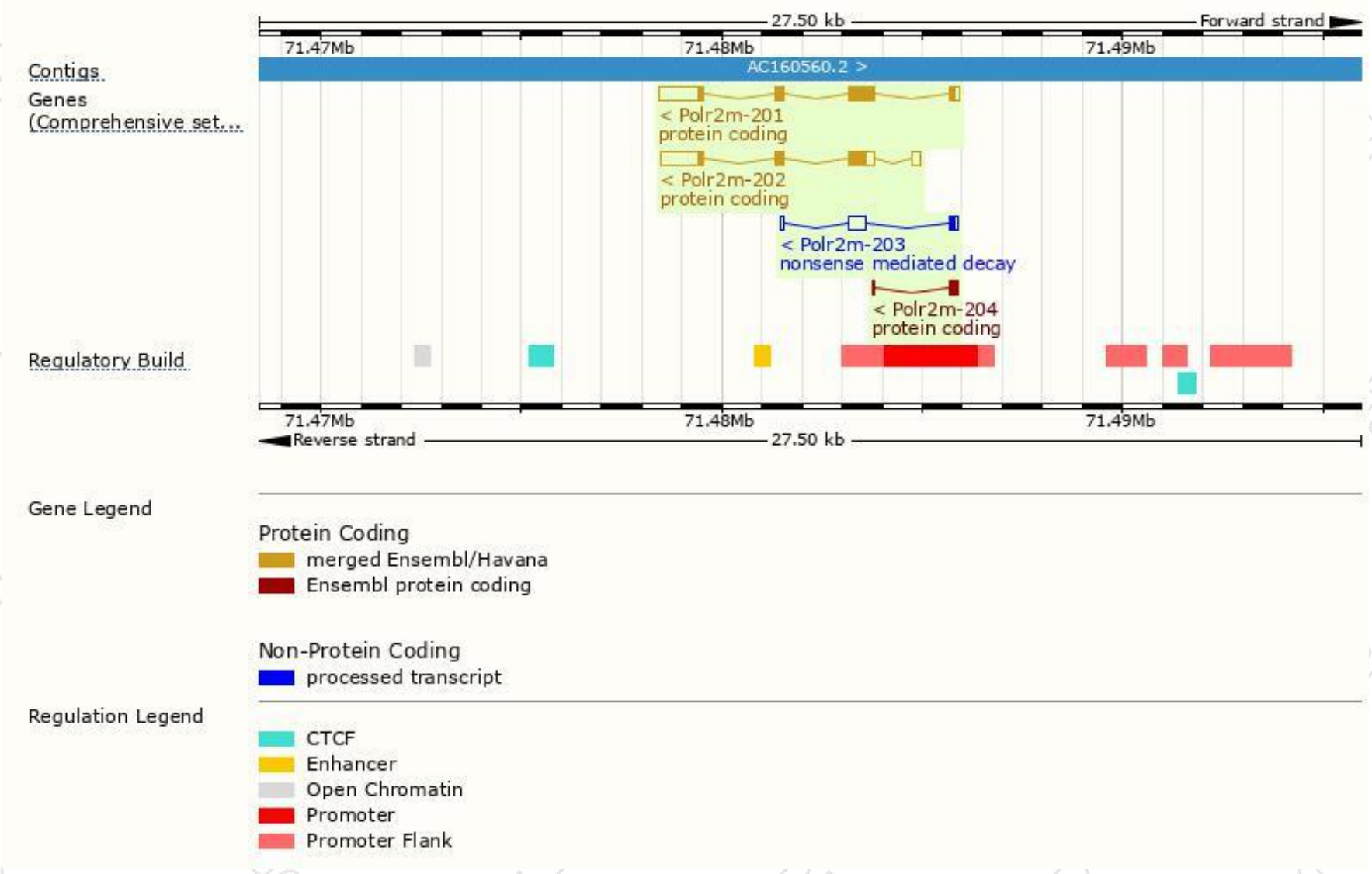
The gene has 4 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Polr2m-201	ENSMUST00000034720.11	2200	366aa	Protein coding	CCDS23326	Q6P6I6	TSL:1 GENCODE basic APPRIS P1
Polr2m-202	ENSMUST00000163972.1	2138	262aa	Protein coding	CCDS52853	Q6P6I6	TSL:1 GENCODE basic
Polr2m-204	ENSMUST00000233263.1	255	84aa	Protein coding	-	A0A3B2WBC6	GENCODE basic
Polr2m-203	ENSMUST00000169804.1	720	39aa	Nonsense mediated decay	-	E9PZ03	TSL:5

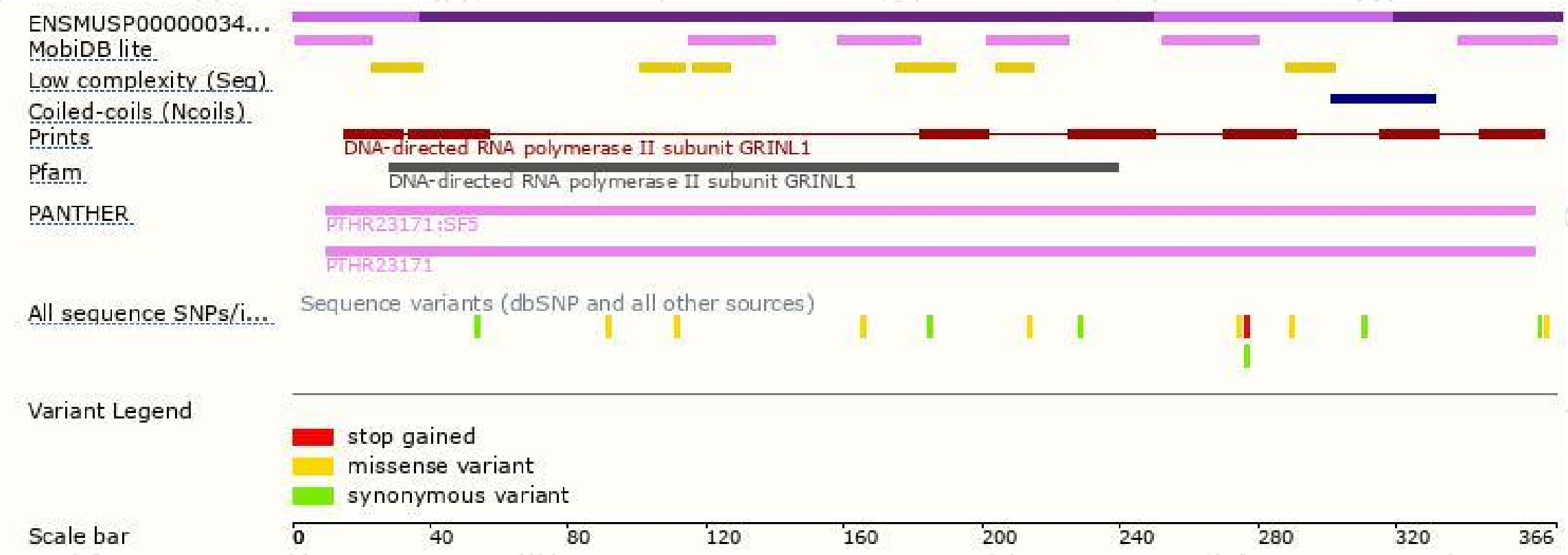
The strategy is based on the design of *Polr2m-201* transcript,The transcription is shown below



Genomic location distribution



Protein domain



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

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