

Crp Cas9-CKO Strategy

Designer:

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Design Date:

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Project Overview

Project Name

Crp

Project type

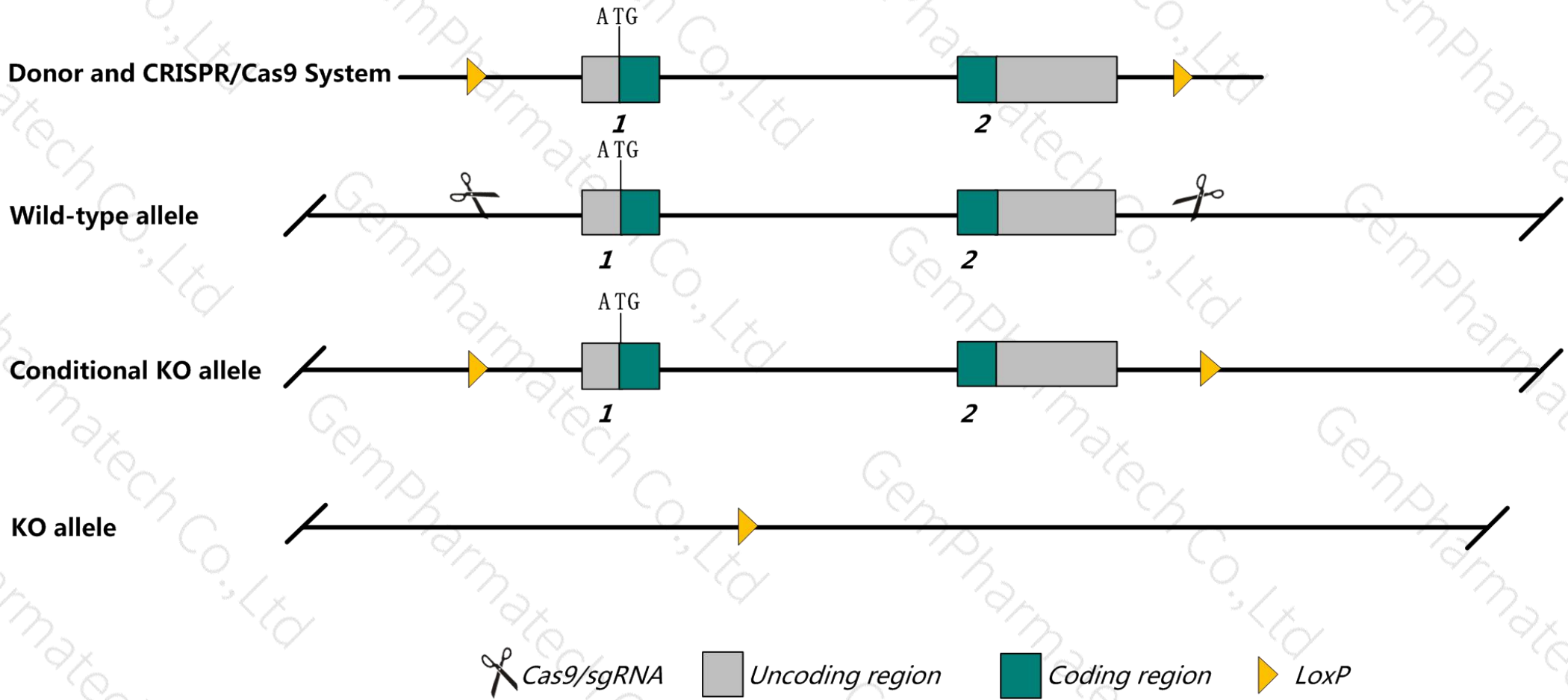
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

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



Technical routes

- The *Crp* gene has 2 transcripts. According to the structure of *Crp* gene, exon1-2 of *Crp*-201 transcript is recommended as the knockout region. The region contains all of coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Crp* 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 or cell types.

- According to the existing MGI data , Mice homozygous for a knock-out allele lack detectable C-reactive protein in the serum but are otherwise healthy and fertile.
- The *Crp* 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 loxp insertion on gene transcription, RNA splicing and protein translation cannot be predicted at the existing technology level.

Gene information (NCBI)

Crp C-reactive protein, pentraxin-related [*Mus musculus* (house mouse)]

Gene ID: 12944, updated on 15-Apr-2019

Summary



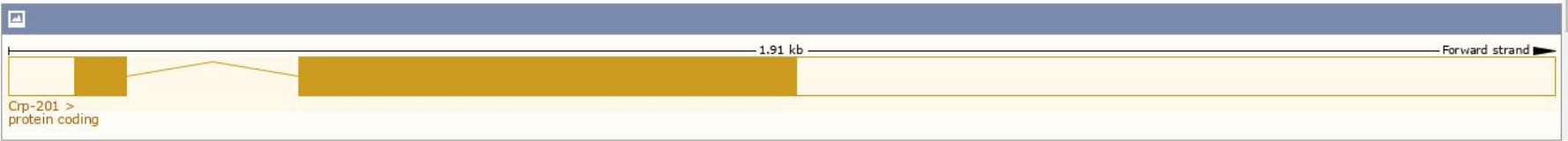
| | |
|--------------------|---|
| Official Symbol | Crp provided by MGI |
| Official Full Name | C-reactive protein, pentraxin-related provided by MGI |
| Primary source | MGI:MGI:88512 |
| See related | Ensembl:ENSMUSG000000037942 |
| Gene type | protein coding |
| RefSeq status | VALIDATED |
| Organism | Mus musculus |
| Lineage | Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus |
| Also known as | AI255847 |
| Expression | Biased expression in liver E18 (RPKM 127.7), liver adult (RPKM 108.0) and 2 other tissues See more |
| Orthologs | human all |

Transcript information (Ensembl)

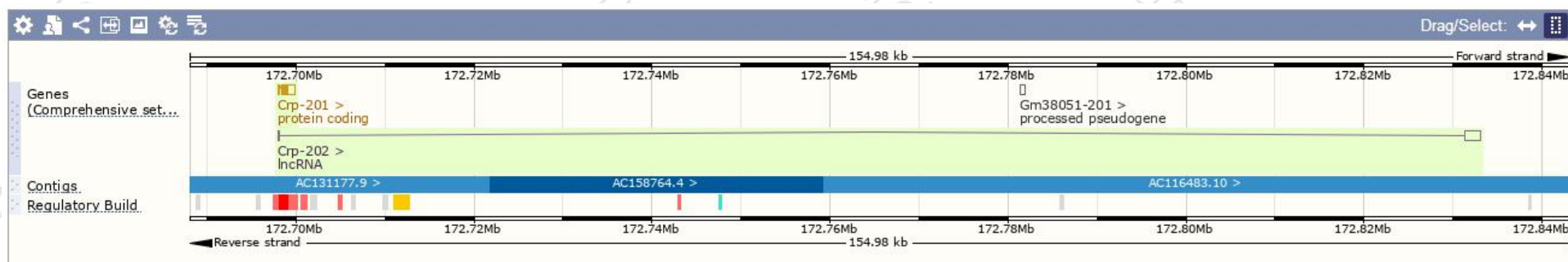
The gene has 2 transcripts, and all transcripts are shown below:

| Show/hide columns (1 hidden) | | | | | | | Filter | |
|------------------------------|--------------------------------------|------|-----------------------|----------------|---------------------------|------------------------|--------|-------------------------|
| Name | Transcript ID | bp | Protein | Biotype | CCDS | UniProt | Flags | |
| Crp-201 | ENSMUST00000038495.4 | 1695 | 225aa | Protein coding | CCDS35787 | P14847 | TSL:2 | GENCODE basic APPRIS P1 |
| Crp-202 | ENSMUST00000194251.1 | 1894 | No protein | lncRNA | - | - | TSL:1 | |

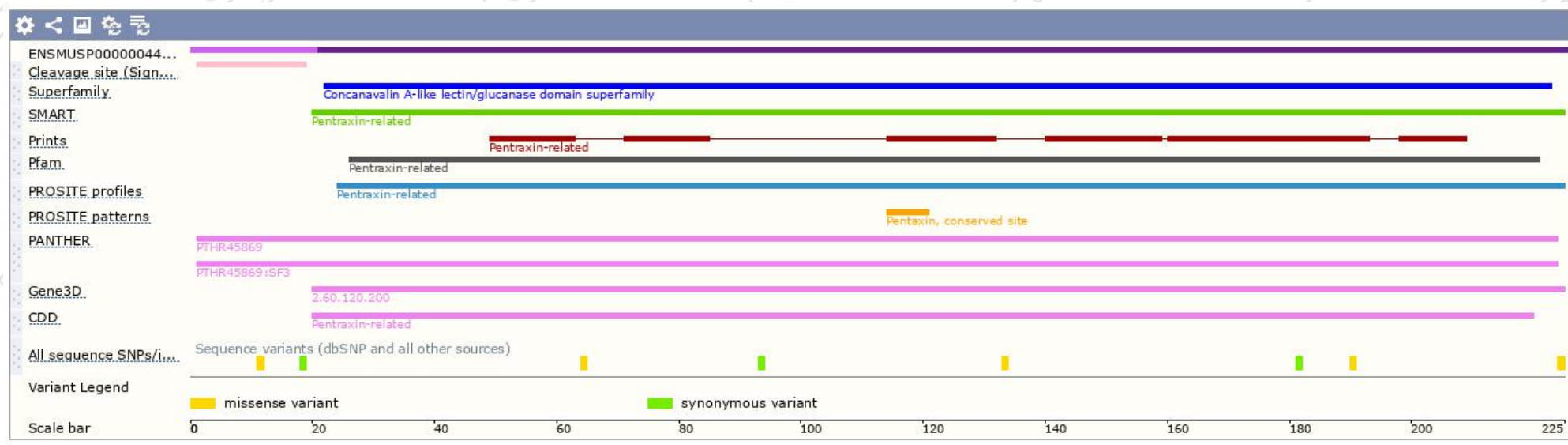
The strategy is based on the design of *Crp*-201 transcript, The transcription is shown below



Genomic location distribution

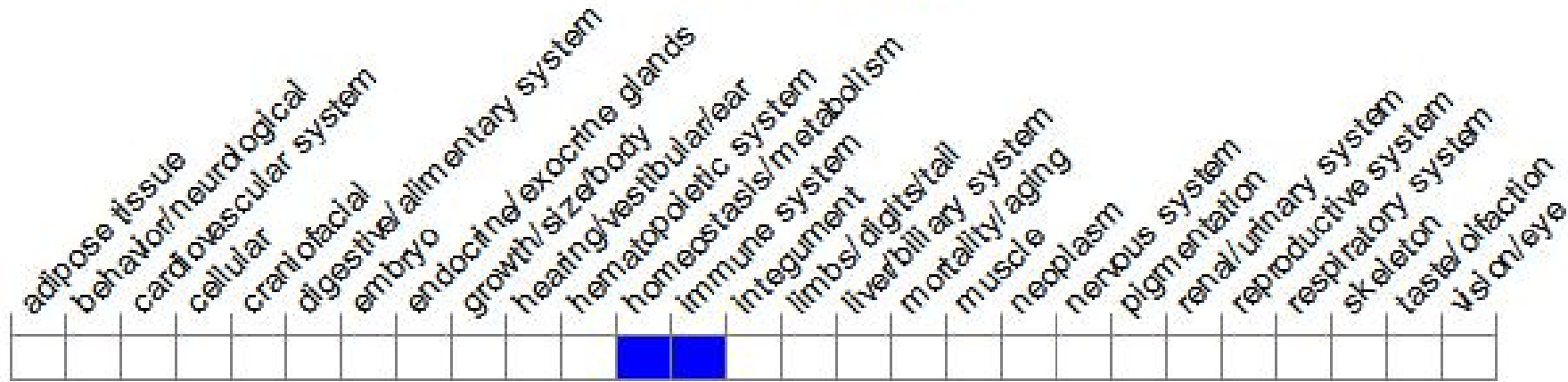


Protein domain



Mouse phenotype description(MGI)

Phenotype Overview ?



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, Mutations in this locus affect cell-cycle regulation and apoptosis. Null homozygotes show high, early-onset tumor incidence; some have persistent hyaloid vasculature and cataracts. Truncated or temperature-sensitive alleles cause early aging phenotypes.

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