

Capg Cas9-CKO Strategy

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Project Overview

Project Name

Capg

Project type

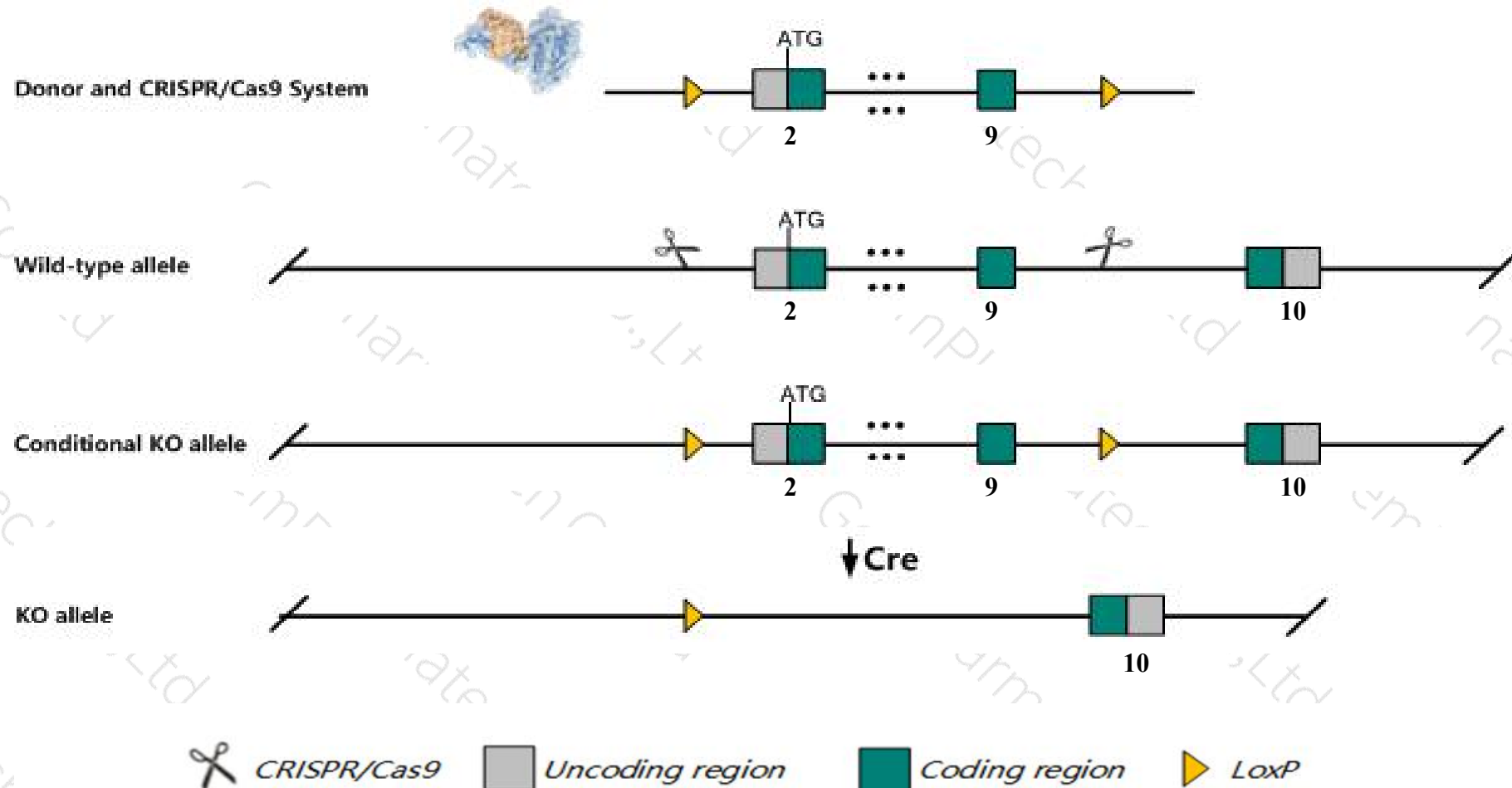
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

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



Technical routes

- The *Capg* gene has 11 transcripts. According to the structure of *Capg* gene, exon2-exon9 of *Capg*-202 (ENSMUST00000114071.7) transcript is recommended as the knockout region. The region contains start codon ATG. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Capg* 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.

- According to the existing MGI data, Inactivation of this loci results in impaired immune cell motility which manifests in homozygous mutant mice as increased susceptibility to some bacterial infections.
- The *Capg* gene is located on the Chr6. 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)

Capg capping protein (actin filament), gelsolin-like [*Mus musculus* (house mouse)]

Gene ID: 12332, updated on 12-Aug-2019

Summary

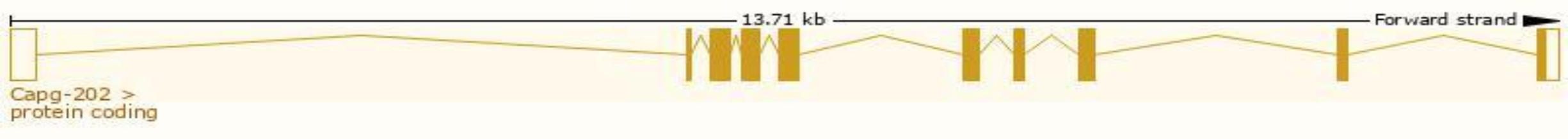
Official Symbol	Capg provided by MGI
Official Full Name	capping protein (actin filament), gelsolin-like provided by MGI
Primary source	MGI:MGI:1098259
See related	Ensembl:ENSMUSG000000056737
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	mbh1; gCap39
Expression	Broad expression in genital fat pad adult (RPKM 25.9), bladder adult (RPKM 25.4) and 19 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

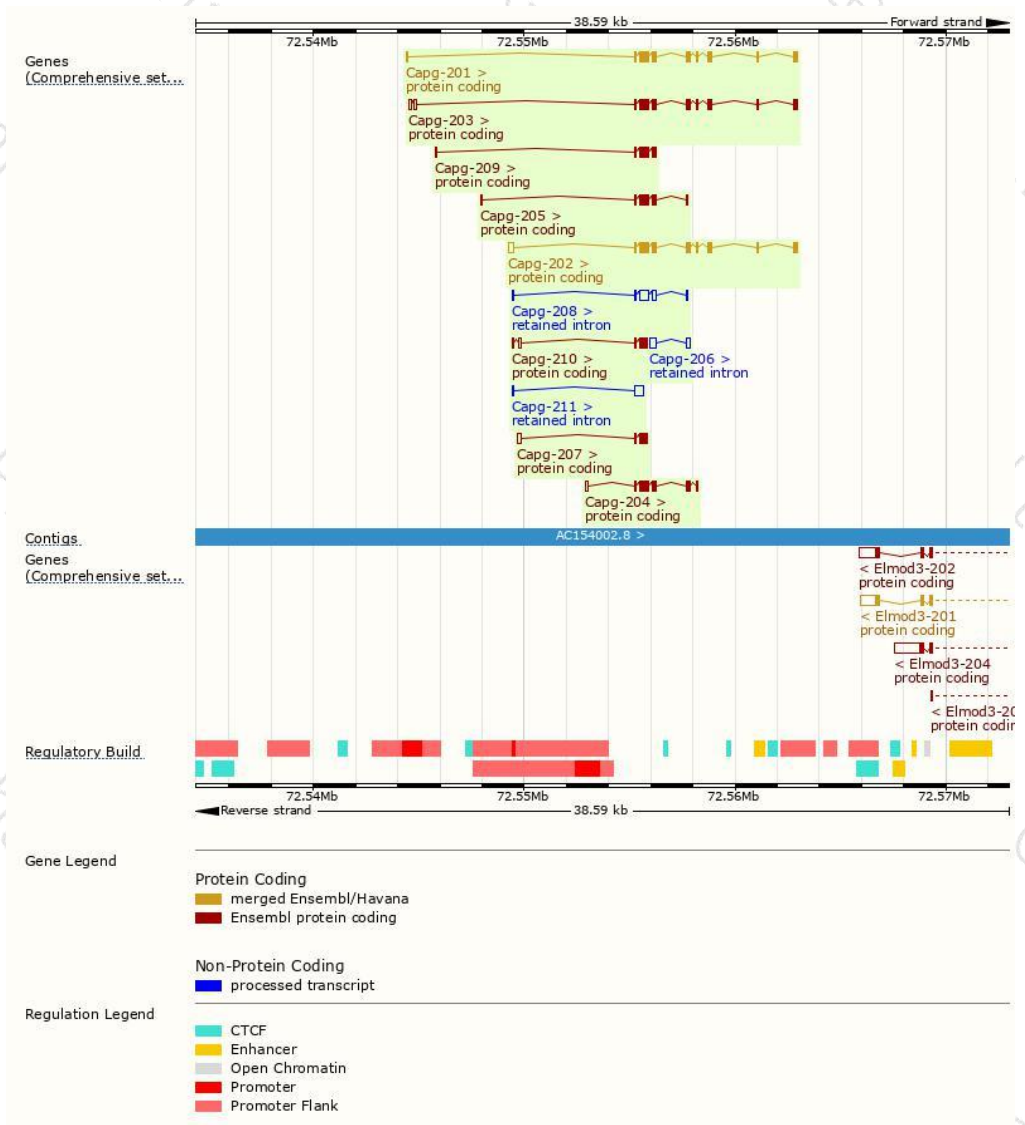
The gene has 11 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Capg-202	ENSMUST00000114071.7	1400	349aa	Protein coding	CCDS39516	Q99LB4	TSL:1 GENCODE basic APPRIS P1
Capg-203	ENSMUST00000114072.7	1388	349aa	Protein coding	CCDS39516	Q99LB4	TSL:1 GENCODE basic APPRIS P1
Capg-201	ENSMUST00000071044.12	1247	349aa	Protein coding	CCDS39516	Q99LB4	TSL:1 GENCODE basic APPRIS P1
Capg-204	ENSMUST00000126101.2	857	254aa	Protein coding	-	D3YTL5	CDS 3' incomplete TSL:5
Capg-205	ENSMUST00000126124.7	679	193aa	Protein coding	-	D3YU77	CDS 3' incomplete TSL:3
Capg-209	ENSMUST00000155188.7	605	173aa	Protein coding	-	D3YZN3	CDS 3' incomplete TSL:5
Capg-210	ENSMUST00000155705.7	515	104aa	Protein coding	-	D3Z4K5	CDS 3' incomplete TSL:3
Capg-207	ENSMUST00000134809.7	500	90aa	Protein coding	-	D3Z014	CDS 3' incomplete TSL:2
Capg-208	ENSMUST00000137435.1	734	No protein	Retained intron	-	-	TSL:3
Capg-206	ENSMUST00000127770.1	411	No protein	Retained intron	-	-	TSL:5
Capg-211	ENSMUST00000156168.1	407	No protein	Retained intron	-	-	TSL:3

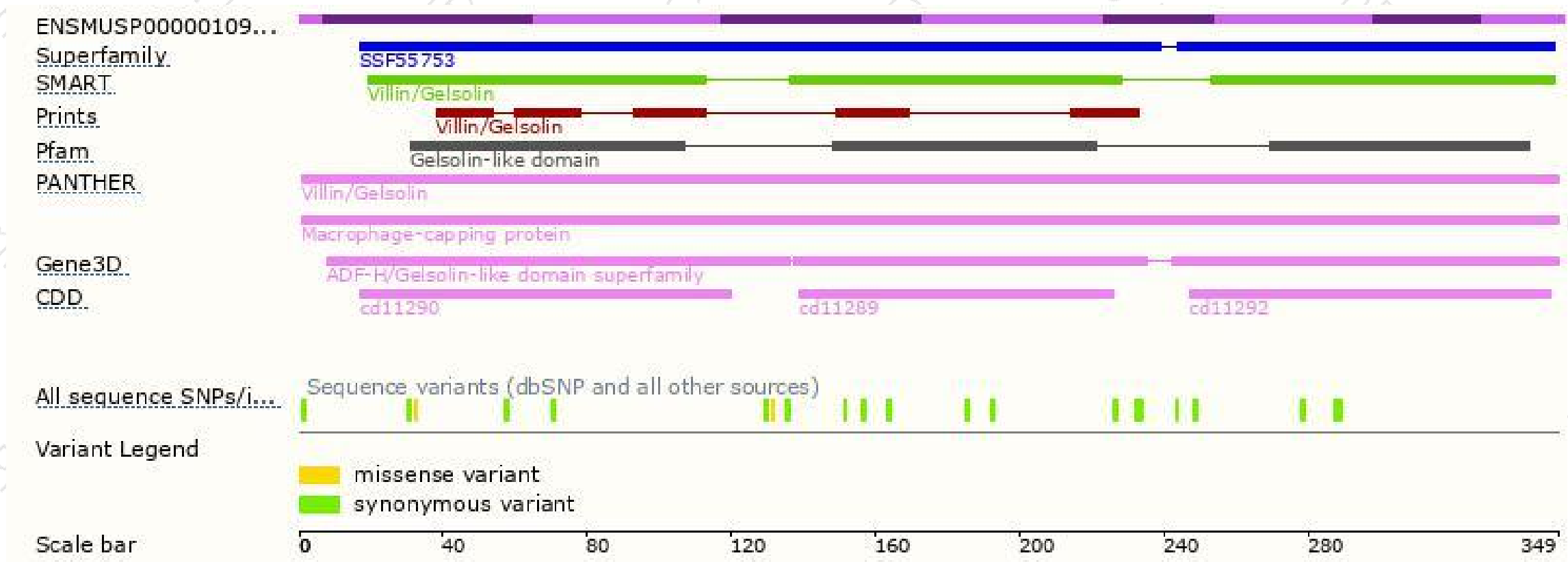
The strategy is based on the design of *Capg-202* transcript,The transcription is shown below



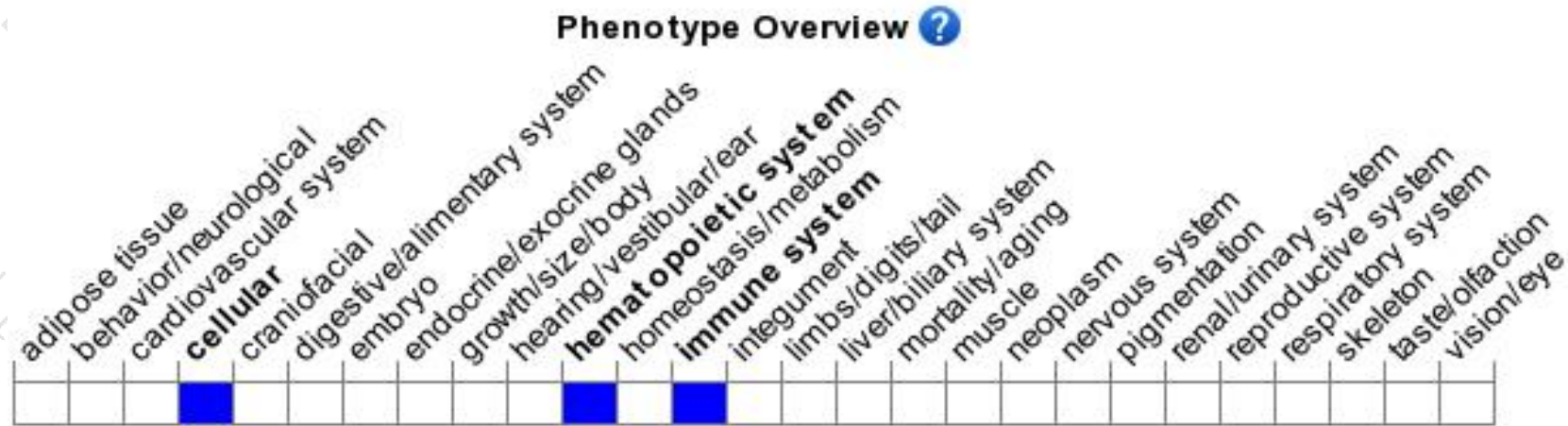
Genomic location distribution



Protein domain



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, Inactivation of this loci results in impaired immune cell motility which manifests in homozygous mutant mice as increased susceptibility to some bacterial infections.

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

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