Gmip Cas9-CKO Strategy

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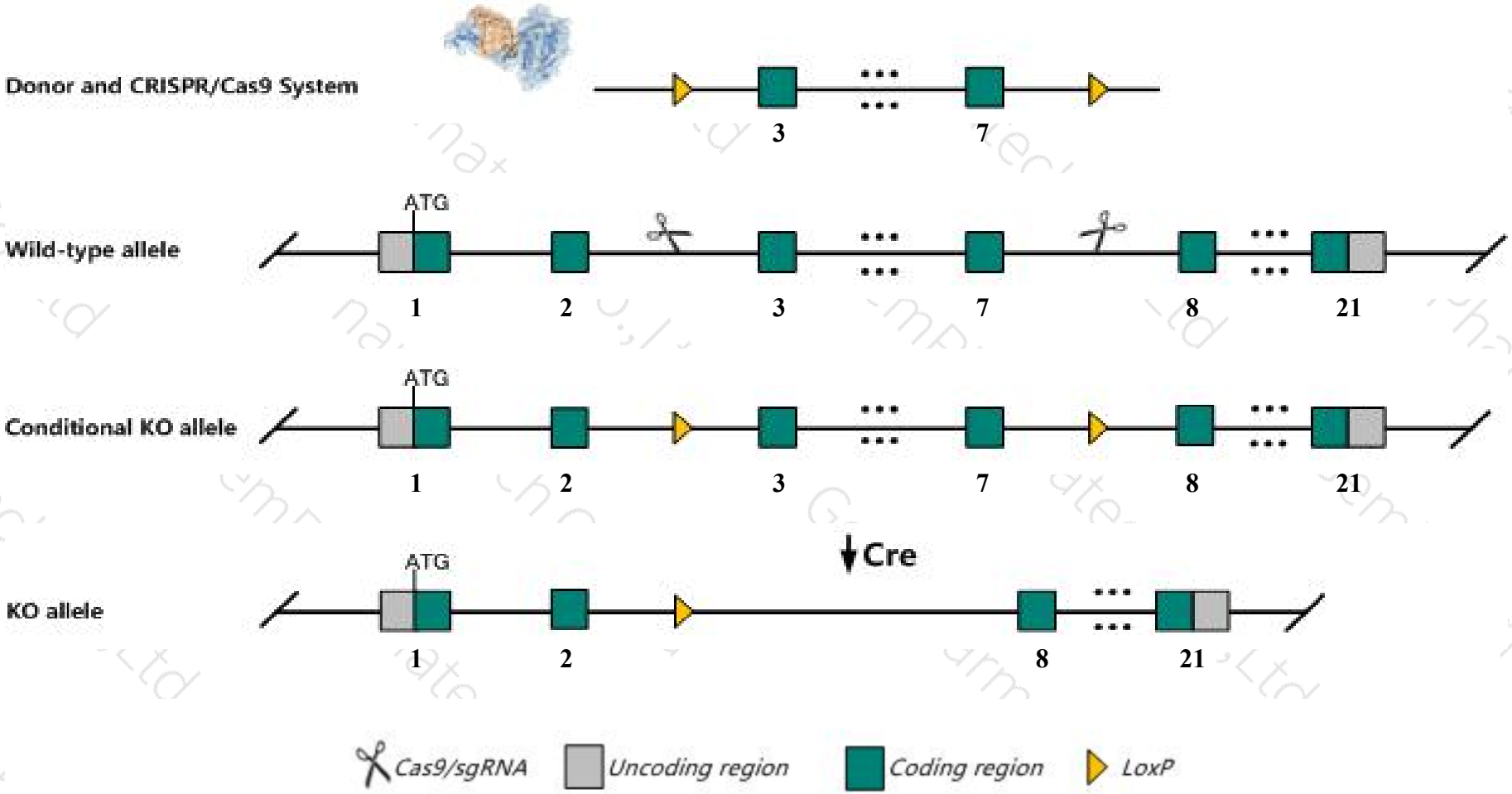
Design Date: 2020-9-30

Project Overview

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

Conditional Knockout strategy

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



Technical routes

➢ The *Gmip* gene has 9 transcripts. According to the structure of *Gmip* gene, exon3-exon7 of *Gmip-201*(ENSMUST00000036074.14) transcript is recommended as the knockout region.The region contains 445bp coding sequence. Knock out the region will result in disruption of protein function.

➢ In this project we use CRISPR/Cas9 technology to modify *Gmip* gene. The brief process is as follows:sgRNA was transcribed in vitro, donor vector was constructed.Cas9, sgRNA 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 was 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

➢ Transcript *Gmip-205* may not be affected.

➢ The *Gmip* gene is located on the Chr8. 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）

集萃药康 GemPharmatech

Gmip Gem-interacting protein [*Mus musculus* (house mouse)]

Gene ID: 78816, updated on 25-Sep-2020

Summary

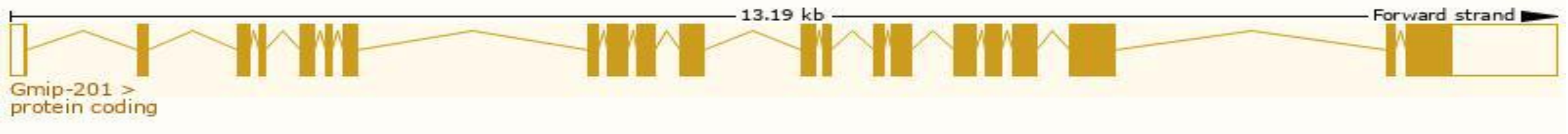
Official Symbol	Gmip provided by MGI
Official Full Name	Gem-interacting protein provided by MGI
Primary source	MGI:MGI:1926066
See related	Ensembl:ENSMUSG00000036246
Gene type	protein coding
RefSeq status	PROVISIONAL
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	5031419I10Rik
Expression	Broad expression in spleen adult (RPKM 38.0), thymus adult (RPKM 25.8) and 21 other tissues See more
Orthologs	human all

Transcript information（Ensembl）

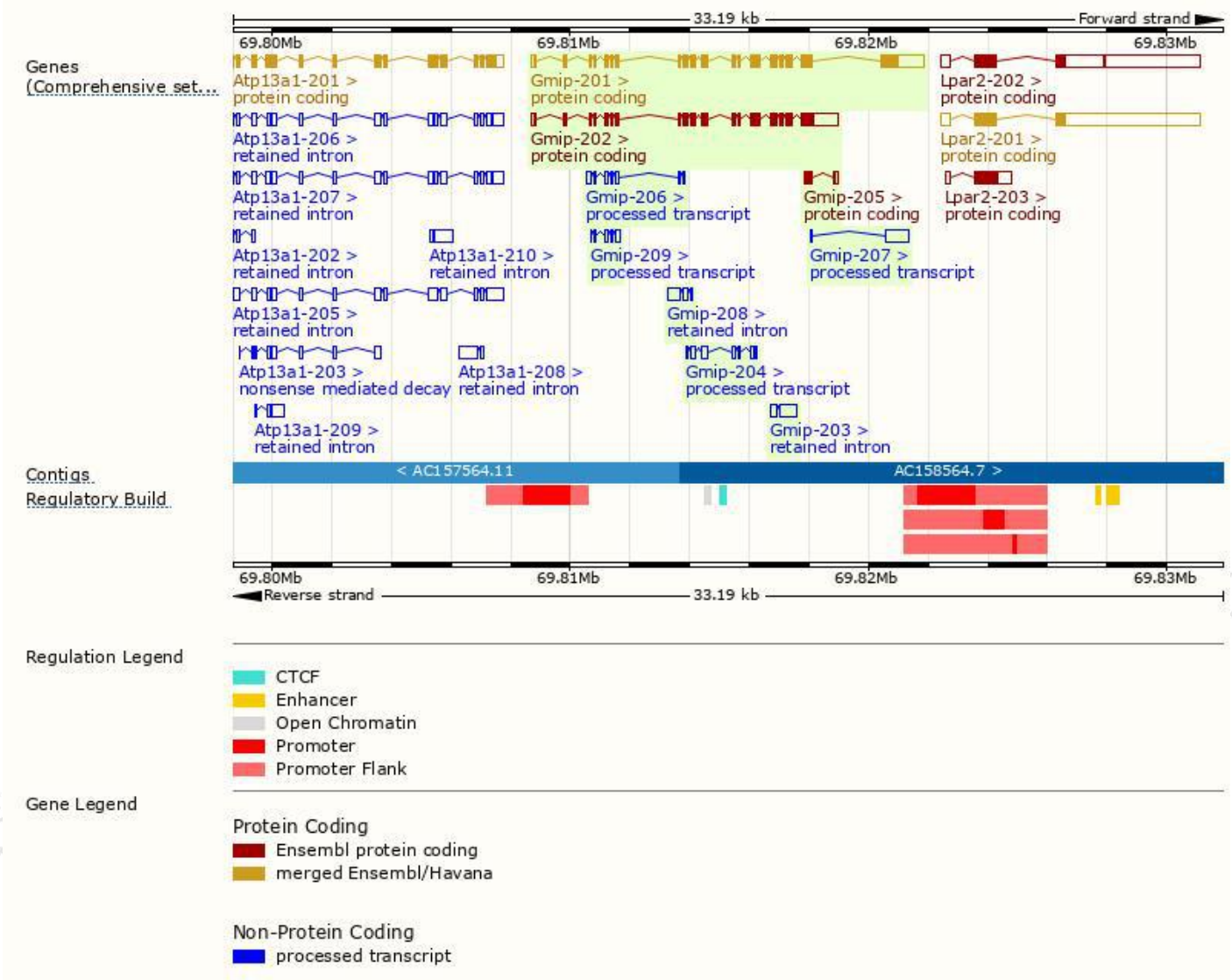
The gene has 9 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Gmip-201	ENSMUST00000036074.14	3933	971aa	Protein coding	CCDS22350	Q6PGG2	TSL:1 GENCODE basic APPRIS P2
Gmip-202	ENSMUST00000123453.1	3443	839aa	Protein coding	-	Q6PGG2	TSL:1 GENCODE basic APPRIS ALT2
Gmip-205	ENSMUST00000142659.1	455	115aa	Protein coding	-	F7AIU6	CDS 5' incomplete TSL:2
Gmip-207	ENSMUST00000144540.1	784	No protein	Processed transcript	-	-	TSL:3
Gmip-206	ENSMUST00000143744.7	692	No protein	Processed transcript	-	-	TSL:3
Gmip-204	ENSMUST00000138269.1	686	No protein	Processed transcript	-	-	TSL:3
Gmip-209	ENSMUST00000156620.1	411	No protein	Processed transcript	-	-	TSL:3
Gmip-203	ENSMUST00000127114.1	803	No protein	Retained intron	-	-	TSL:3
Gmip-208	ENSMUST00000154903.1	668	No protein	Retained intron	-	-	TSL:3

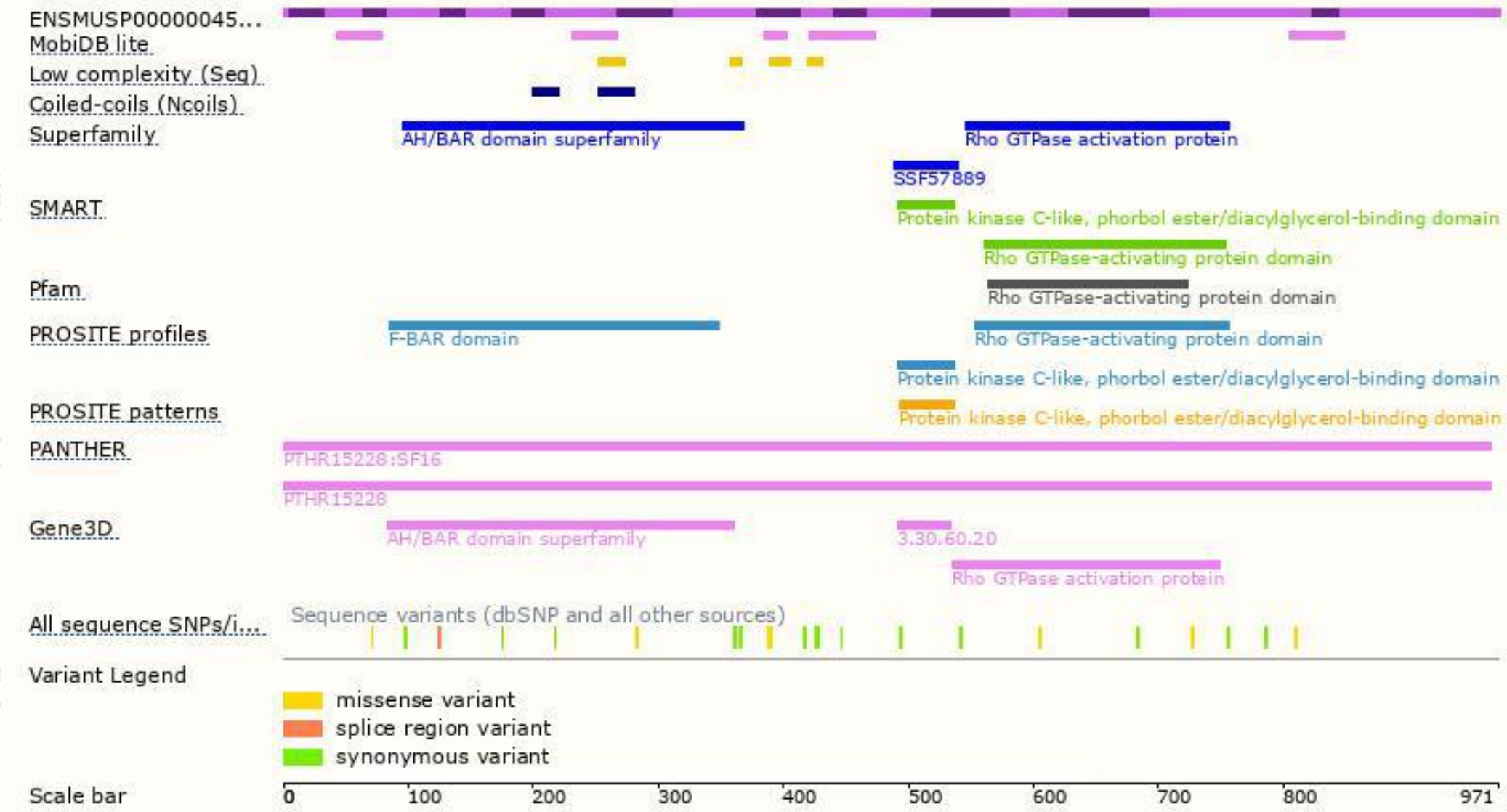
The strategy is based on the design of *Gmip-201* transcript,the transcription is shown below:



Genomic location distribution



Protein domain



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

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