Usp34 Cas9-CKO Strategy

Designer: Yanhua Shen
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集萃药康 GemPharmatech

Project Overview

Project Name	***Usp34***
Project type	**Cas9-CKO**
Strain background	**C57BL/6JGpt**

Conditional Knockout strategy

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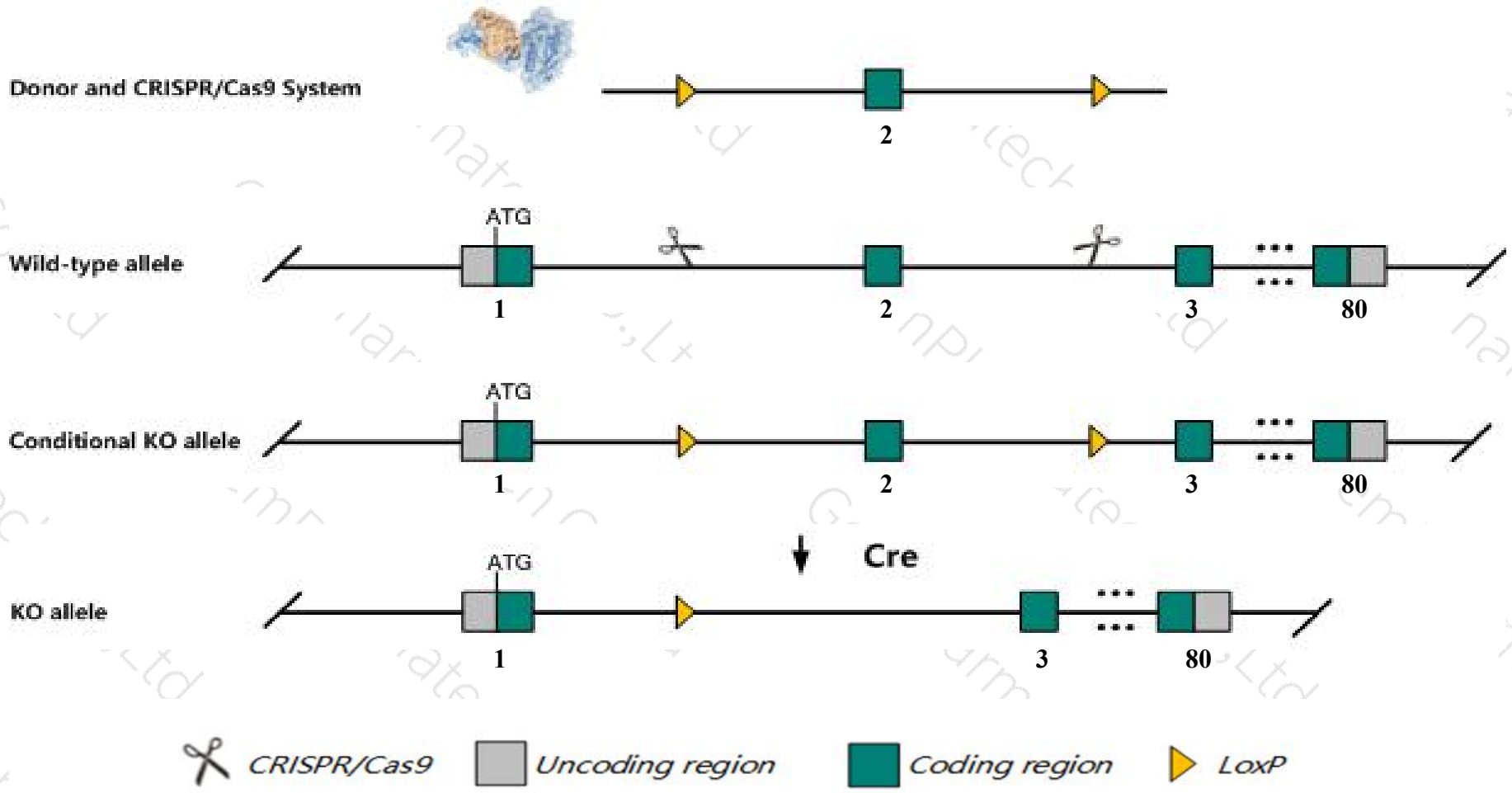
This model will use CRISPR/Cas9 technology to edit the *Usp34* gene. The schematic diagram is as follows:



Technical routes

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- The *Usp34* gene has 8 transcripts. According to the structure of *Usp34* gene, exon2 of *Usp34-208* (ENSMUST00000180046.7) transcript is recommended as the knockout region.The region contains 88bp coding sequence. Knock out the region will result in disruption of protein function.

- In this project we use CRISPR/Cas9 technology to modify *Usp34* 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

- According to the existing MGI data,Mice homozygous for a conditional allele activated in early limb bud exhibit reduced osteogenic differentiation and bone formation.

- The *Usp34* gene is located on the Chr11. 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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Usp34 ubiquitin specific peptidase 34 [Mus musculus (house mouse)]

Gene ID: 17847, updated on 31-Jan-2019

Summary

Official Symbol	Usp34 provided by MGI
Official Full Name	ubiquitin specific peptidase 34 provided by MGI
Primary source	MGI:MGI:109473
See related	Ensembl:ENSMUSG00000056342
Gene type	protein coding
RefSeq status	INFERRED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	A530081C03Rik, Murr2
Expression	Ubiquitous expression in CNS E18 (RPKM 12.8), CNS E14 (RPKM 10.9) and 26 other tissues See more
Orthologs	human all

Transcript information（Ensembl）

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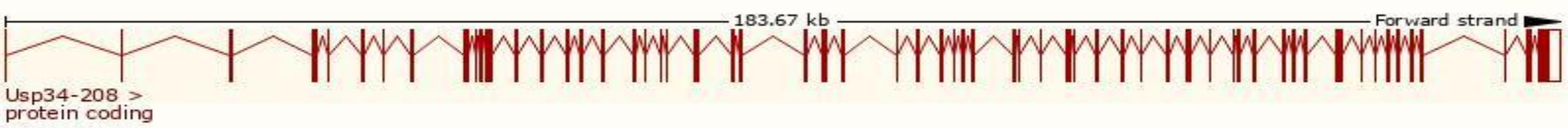
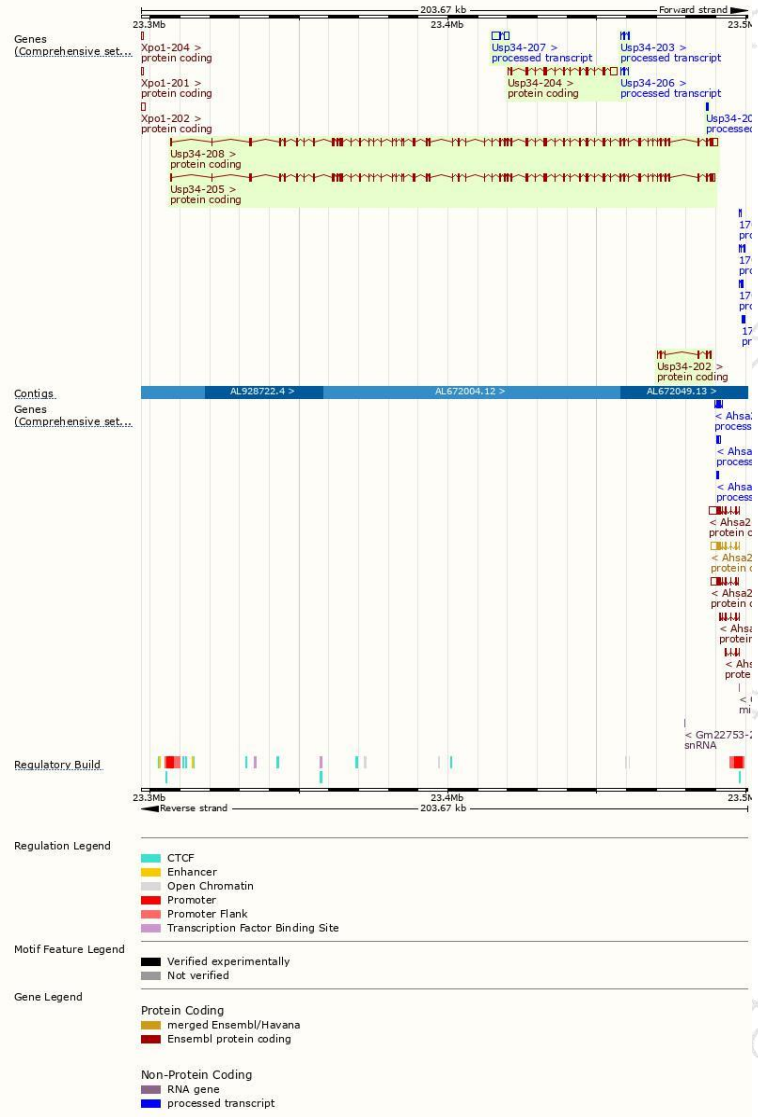
The gene has 8 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Usp34-201	ENSMUST00000125701.1	399	No protein	lncRNA	-	-	TSL:3
Usp34-202	ENSMUST00000129368.2	865	288aa	Protein coding	-	Z4YN11	CDS 5' and 3' incomplete TSL:5
Usp34-203	ENSMUST00000129521.7	585	No protein	lncRNA	-	-	TSL:5
Usp34-204	ENSMUST00000130131.1	4439	810aa	Protein coding	-	Z4YLQ1	CDS 5' incomplete TSL:5
Usp34-205	ENSMUST00000137823.7	11363	3602aa	Protein coding	-	F6WJB7	CDS 5' incomplete TSL:5
Usp34-206	ENSMUST00000148927.1	237	No protein	lncRNA	-	-	TSL:5
Usp34-207	ENSMUST00000155984.1	4327	No protein	lncRNA	-	-	TSL:1
Usp34-208	ENSMUST00000180046.7	12200	3582aa	Protein coding	CCDS56763	Q6ZQ93	TSL:5 GENCODE basic APPRIS P1

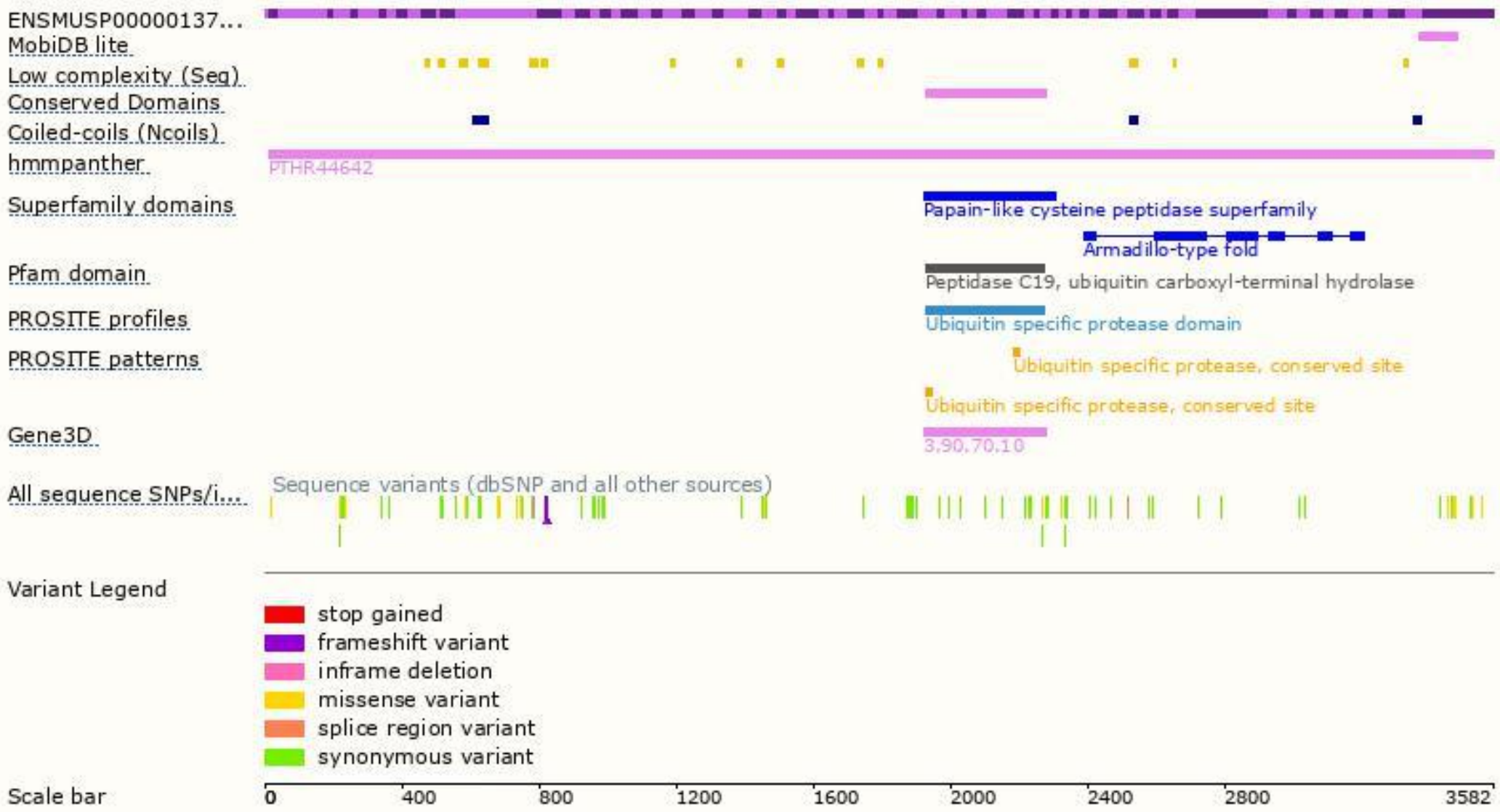
The strategy is based on the design of *Usp34-208* transcript,The transcription is shown below



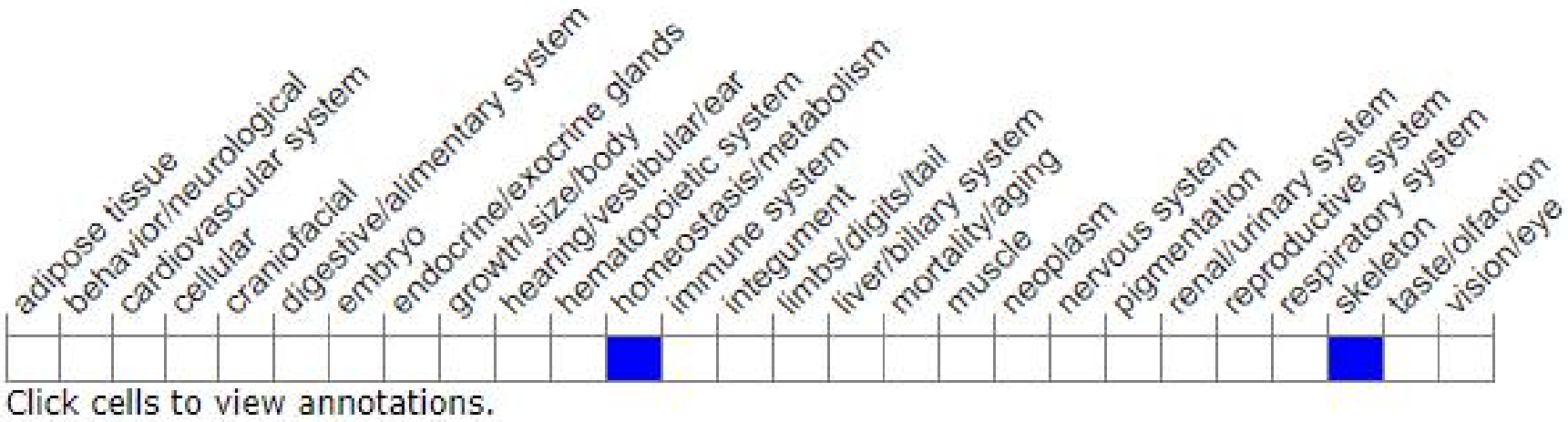
Genomic location distribution



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,Mice homozygous for a conditional allele activated in early limb bud exhibit reduced osteogenic differentiation and bone formation.

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If you have any questions, you are welcome to inquire.
Tel: 400-9660890

集萃药康生物科技
GemPharmatech Co.,Ltd