Rnf144a Cas9-CKO Strategy

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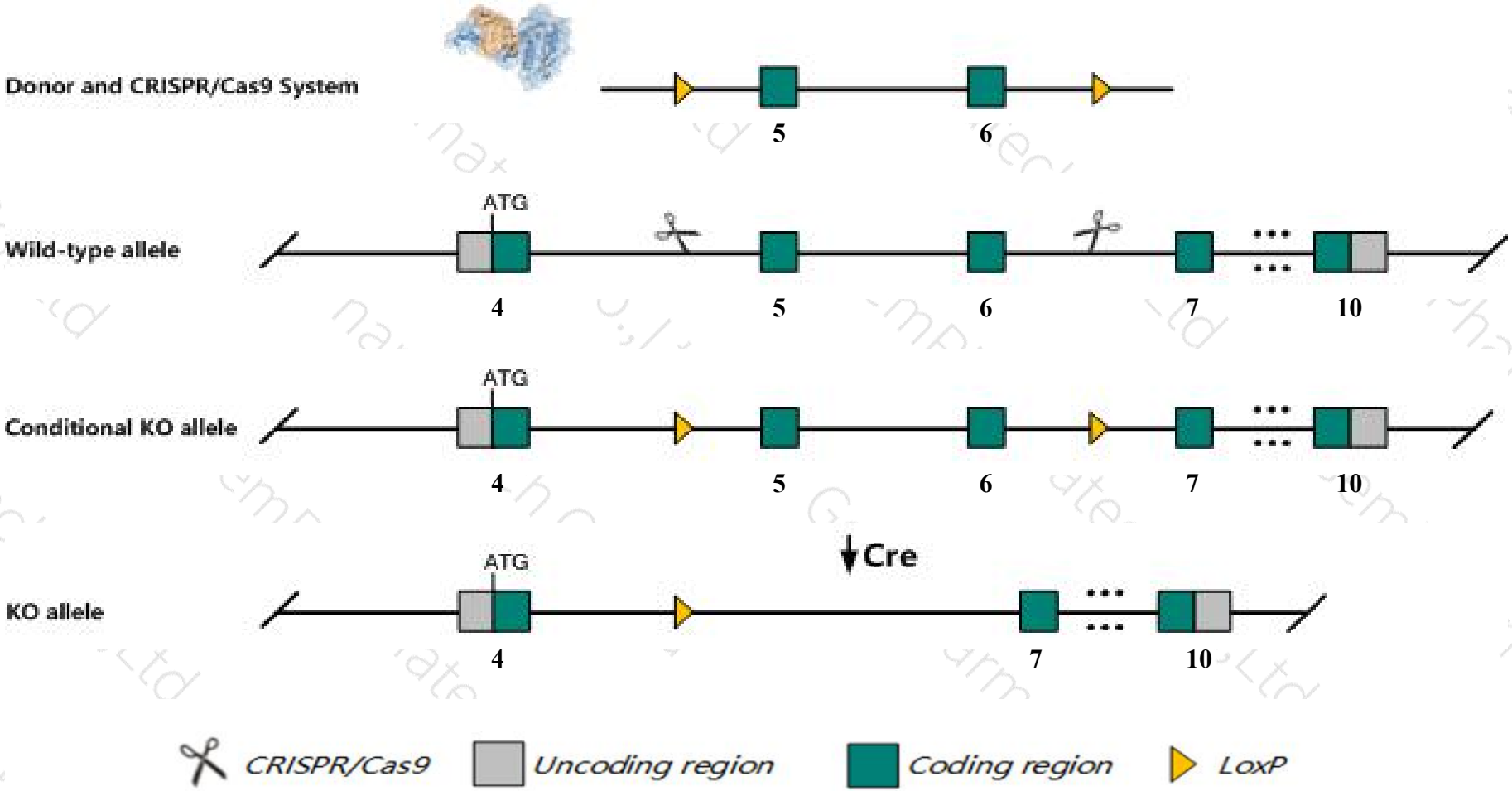
Project Overview

Project Name	***Rnf144a***
Project type	**Cas9-CKO**
Strain background	**C57BL/6JGpt**

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Rnf144a* gene. The schematic diagram is as follows:



Technical routes

- The *Rnf144a* gene has 7 transcripts. According to the structure of *Rnf144a* gene, exon5-exon6 of *Rnf144a-201* (ENSMUST00000020971.13) transcript is recommended as the knockout region.The region contains 166bp coding sequence. Knock out the region will result in disruption of protein function.

- In this project we use CRISPR/Cas9 technology to modify *Rnf144a* 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 *Rnf144a* gene is located on the Chr12. 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

Rnf144a ring finger protein 144A [Mus musculus (house mouse)]

Gene ID: 108089, updated on 13-Mar-2020

Summary

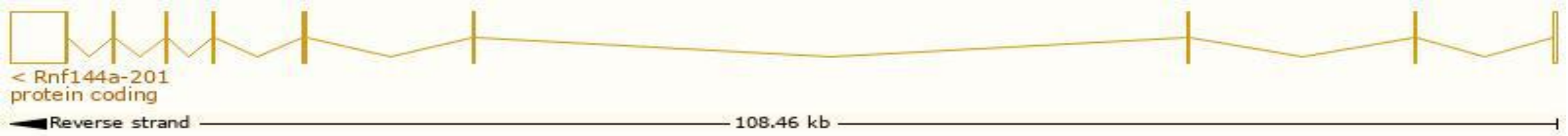
Official Symbol	Rnf144a provided by MGI
Official Full Name	ring finger protein 144A provided byMGI
Primary source	MGI:MGI:1344401
See related	Ensembl:ENSMUSG00000020642
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	Rnf144, UIP4, Ubce7ip4
Expression	Broad expression in lung adult (RPKM 29.8), limb E14.5 (RPKM 11.1) and 17 other tissuesSee more
Orthologs	human all

Transcript information（Ensembl）

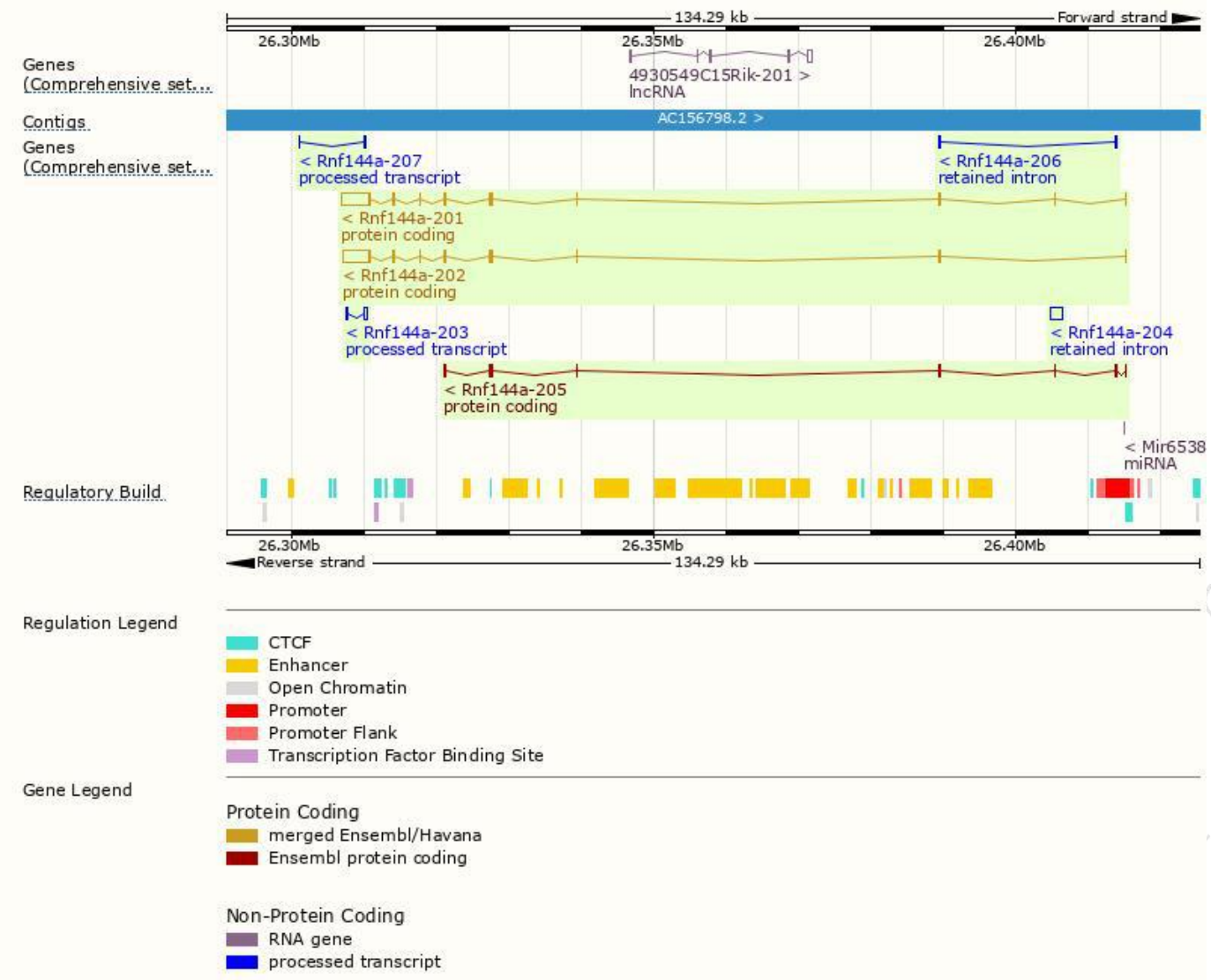
The gene has 7 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Rnf144a-201	ENSMUST00000020971.13	5164	292aa	Protein coding	CCDS36425	Q925F3	TSL:1 GENCODE basic APPRIS P1
Rnf144a-202	ENSMUST00000062149.5	4812	292aa	Protein coding	CCDS36425	Q925F3	TSL:1 GENCODE basic APPRIS P1
Rnf144a-205	ENSMUST00000222082.1	764	132aa	Protein coding	-	A0A1Y7VMM6	CDS 3' incomplete TSL:3
Rnf144a-203	ENSMUST00000220742.1	558	No protein	Processed transcript	-	-	TSL:3
Rnf144a-207	ENSMUST00000223137.1	343	No protein	Processed transcript	-	-	TSL:3
Rnf144a-204	ENSMUST00000221994.1	1757	No protein	Retained intron	-	-	TSL:NA
Rnf144a-206	ENSMUST00000222505.1	498	No protein	Retained intron	-	-	TSL:3

The strategy is based on the design of *Rnf144a-201* transcript,the transcription is shown below:

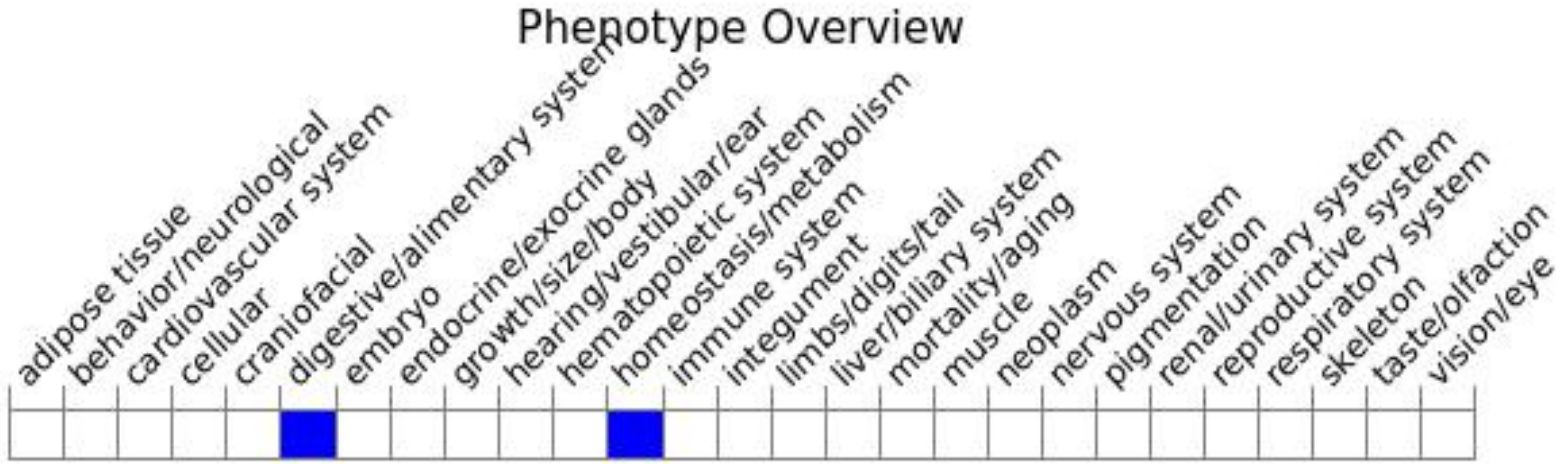


Genomic location distribution



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/).

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

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