

Rchy1 Cas9-CKO Strategy

Designer:	Huan Wang
Reviewer:	Huan Fan
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Project Overview

Project Name

Rchy1

Project type

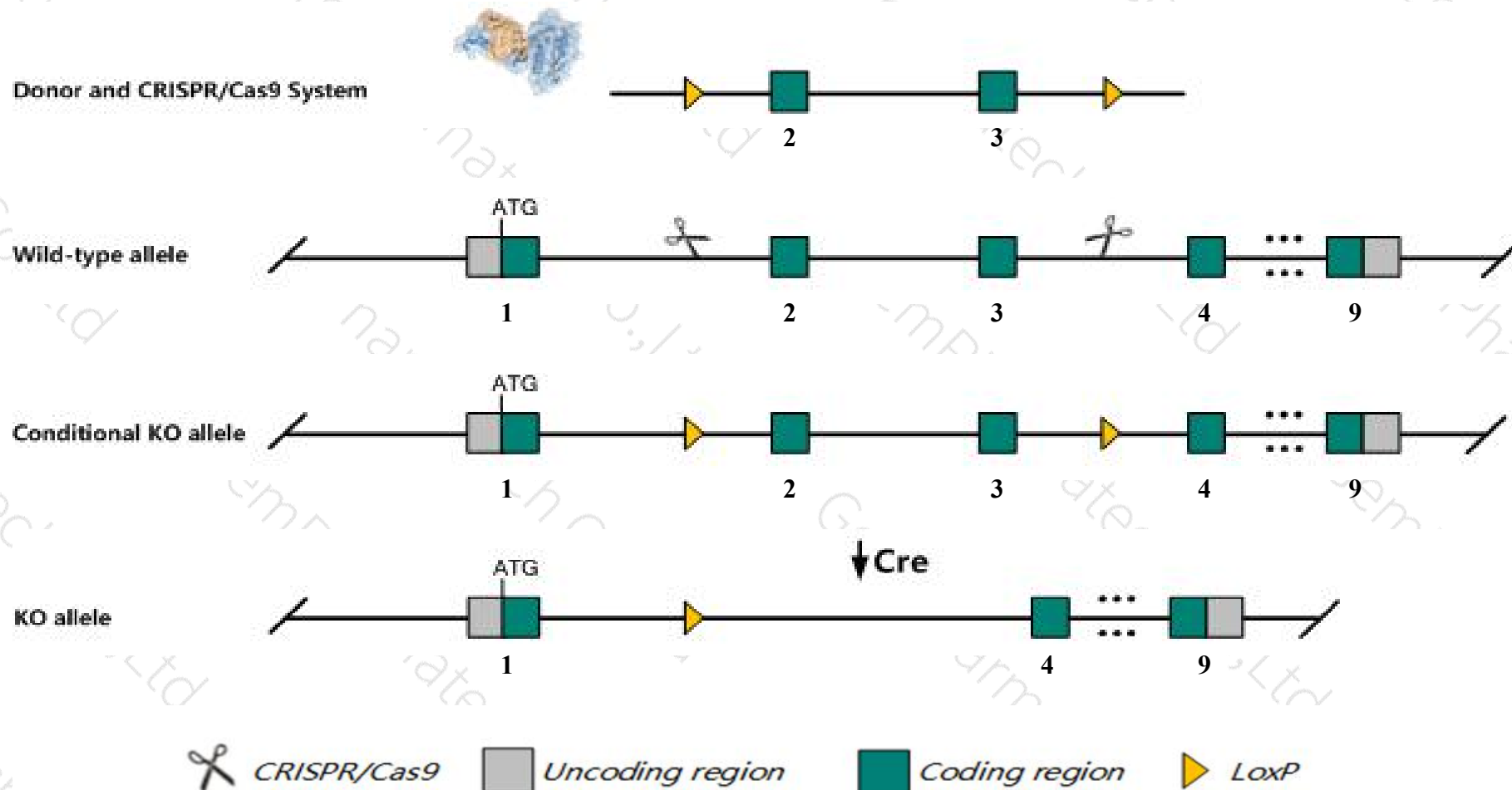
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Rchy1* gene. The schematic diagram is as follows:



- The *Rchy1* gene has 5 transcripts. According to the structure of *Rchy1* gene, exon2-exon3 of *Rchy1*-201 (ENSMUST00000031345.14) transcript is recommended as the knockout region. The region contains 236bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Rchy1* 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, mouse embryonic fibroblasts from mice homozygous for a knock-out allele exhibit decreased cellular sensitivity to uv irradiation.
- The *Rchyl* gene is located on the Chr5. 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)

Rchy1 ring finger and CHY zinc finger domain containing 1 [Mus musculus (house mouse)]

Gene ID: 68098, updated on 13-Mar-2020

Summary



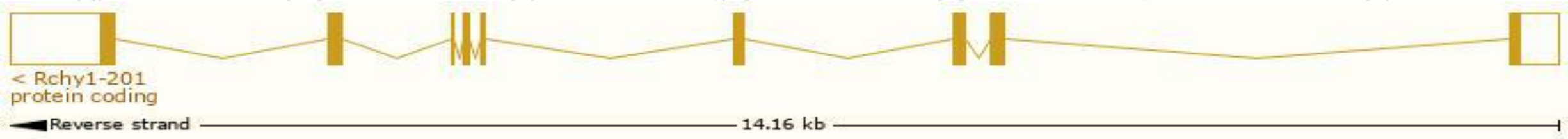
Official Symbol	Rchy1 provided by MGI
Official Full Name	ring finger and CHY zinc finger domain containing 1 provided by MGI
Primary source	MGI:MGI:1915348
See related	Ensembl:ENSMUSG00000029397
Gene type	protein coding
RefSeq status	REVIEWED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	ARNIP, CHIMP, Pirh2, Zfp363, Znf363
Summary	This gene encodes a protein containing CHY-, CTCHY-, and RING-type zinc-fingers. The encoded protein functions as an E3 ubiquitin ligase, and mediates the degradation of target proteins such as p53. The activity of this protein is important in cell cycle regulation. Alternative splicing results in multiple transcript variants. [provided by RefSeq, Nov 2012]
Expression	Ubiquitous expression in bladder adult (RPKM 12.9), CNS E14 (RPKM 12.2) and 28 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

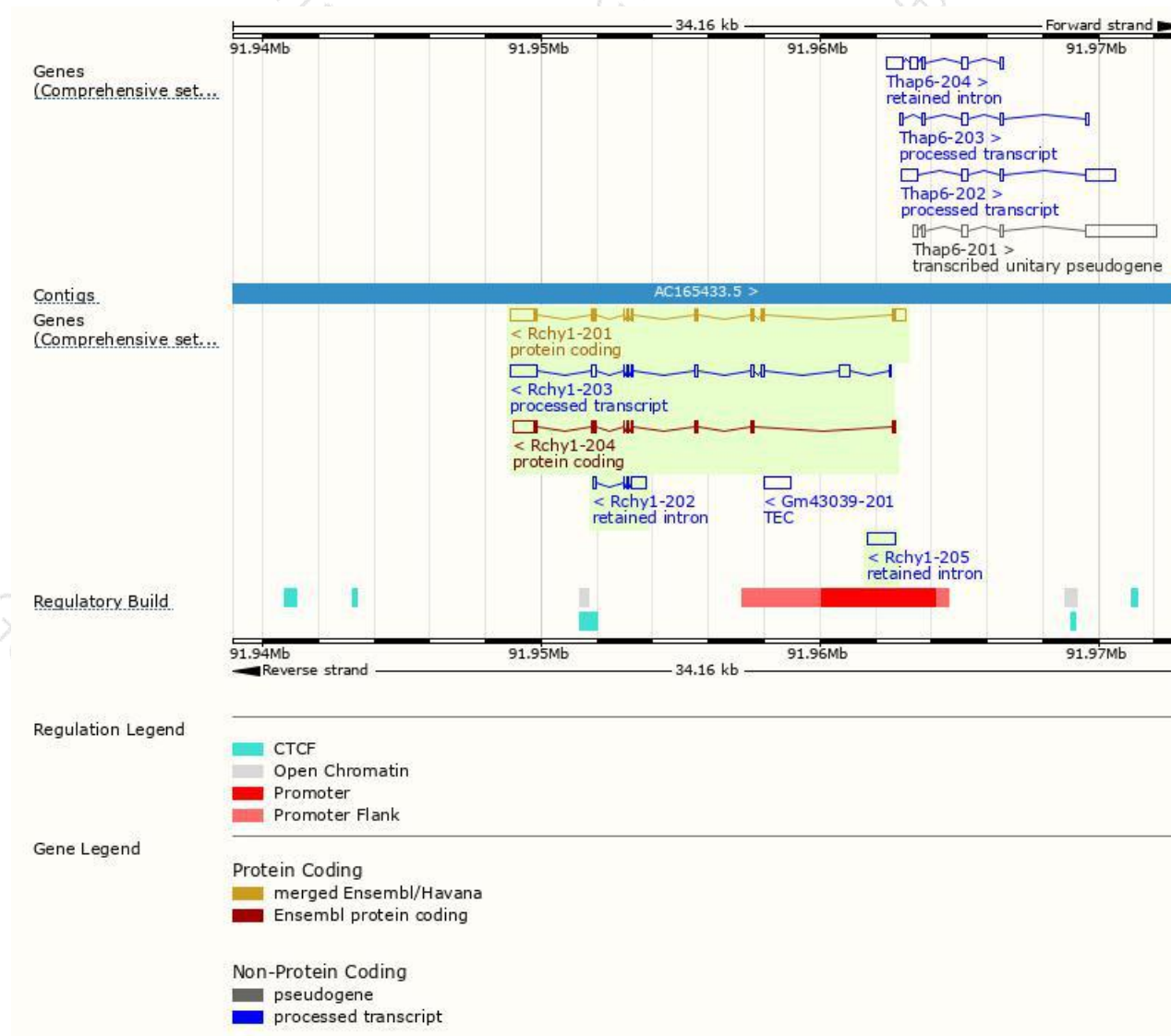
The gene has 5 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Rchy1-201	ENSMUST00000031345.14	1967	261aa	Protein coding	CCDS19424	Q9CR50	TSL:1 GENCODE basic APPRIS is a system to annotate alternatively spliced transcripts based on a range of computational methods to identify the most functionally important transcript(s) of a gene. APPRIS P1
Rchy1-204	ENSMUST00000169948.1	1417	221aa	Protein coding	CCDS71613	G3UWD8	TSL:3 GENCODE basic
Rchy1-203	ENSMUST00000140670.7	1959	No protein	Processed transcript	-	-	TSL:1
Rchy1-205	ENSMUST00000200905.1	1046	No protein	Retained intron	-	-	TSL:NA
Rchy1-202	ENSMUST00000138351.1	715	No protein	Retained intron	-	-	TSL:3

The strategy is based on the design of *Rchy1-201* transcript,the transcription is shown below:



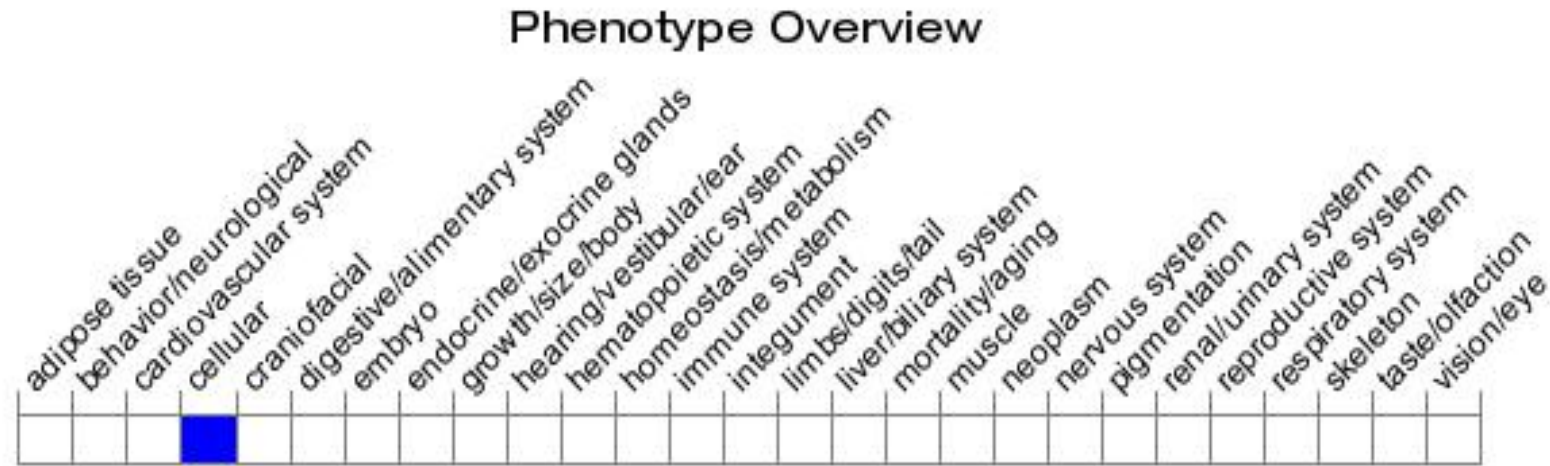
Genomic location distribution



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/>).

According to the existing MGI data, mouse embryonic fibroblasts from mice homozygous for a knock-out allele exhibit decreased cellular sensitivity to UV irradiation.

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

Tel: 400-9660890

