

# *Zcchc17* Cas9-KO Strategy

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**Reviewer:**

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**Design Date:**

**2019-11-22**

# Project Overview

**Project Name**

***Zcchc17***

**Project type**

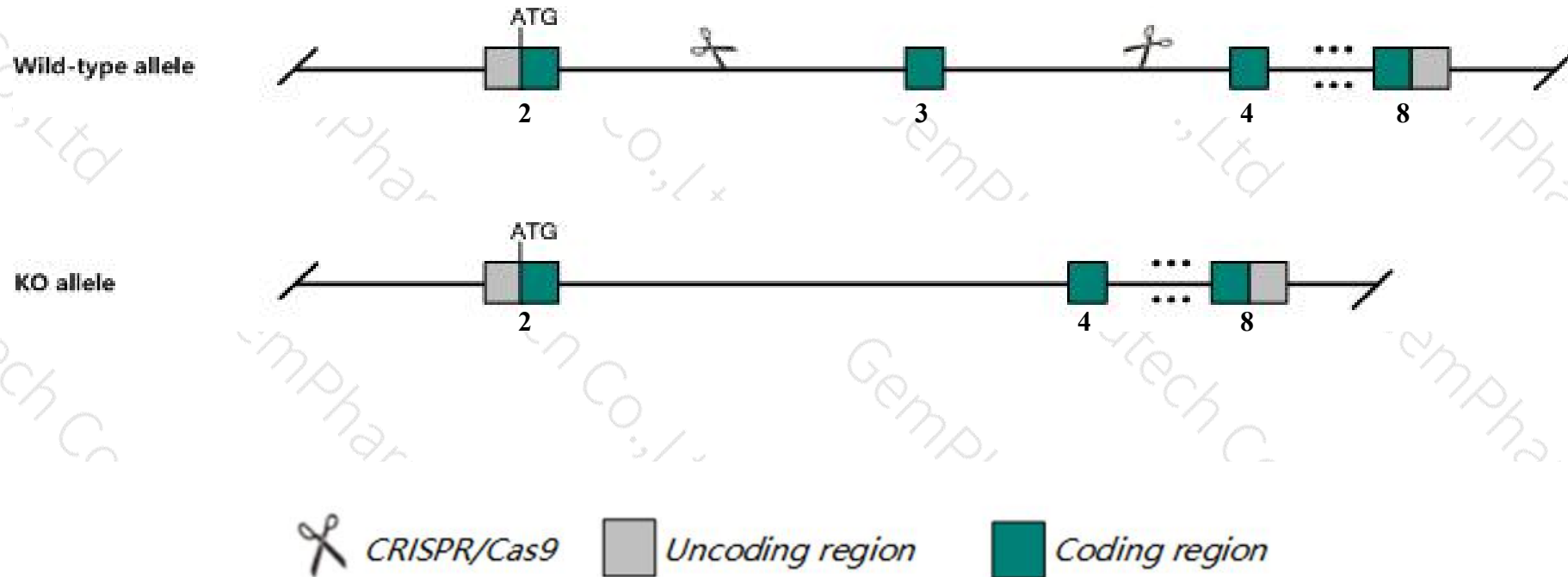
**Cas9-KO**

**Strain background**

**C57BL/6JGpt**

# Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Zcchc17* gene. The schematic diagram is as follows:



- The *Zcchc17* gene has 5 transcripts. According to the structure of *Zcchc17* gene, exon3 of *Zcchc17-202* (ENSMUST00000134159.2) transcript is recommended as the knockout region. The region contains 58bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Zcchc17* gene. The brief process is as follows: CRISPR/Cas9 system

- According to the existing MGI data, Specific KO of the short isoform reduces osteogenic differentiation of mesenchymal stem cells and results in early cellular senescence in the embryonic notochord and forelimb bones.
- The *Zcchc17* gene is located on the Chr4. 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 the gene knockout on gene transcription, RNA splicing and protein translation cannot be predicted at the existing technology level.



# Gene information (NCBI)

## Zcchc17 zinc finger, CCHC domain containing 17 [Mus musculus (house mouse)]

Gene ID: 619605, updated on 31-Jan-2019

### Summary



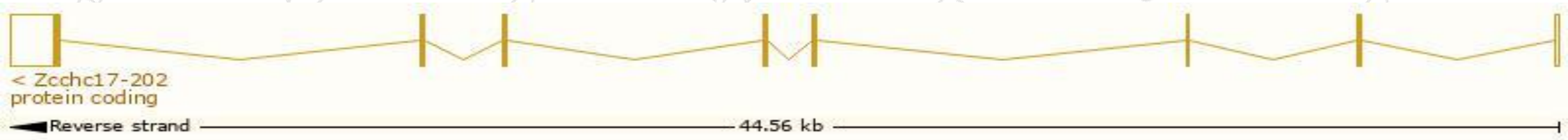
<b>Official Symbol</b>	Zcchc17 provided by <a href="#">MGI</a>
<b>Official Full Name</b>	zinc finger, CCHC domain containing 17 provided by <a href="#">MGI</a>
<b>Primary source</b>	<a href="#">MGI:MGI:1919955</a>
<b>See related</b>	<a href="#">Ensembl:ENSMUSG00000028772</a>
<b>Gene type</b>	protein coding
<b>RefSeq status</b>	VALIDATED
<b>Organism</b>	<a href="#">Mus musculus</a>
<b>Lineage</b>	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
<b>Also known as</b>	2810055E05Rik, HSPC251, LDC4, pNO40, pS1D
<b>Expression</b>	Ubiquitous expression in cerebellum adult (RPKM 20.1), cortex adult (RPKM 17.9) and 28 other tissues <a href="#">See more</a>
<b>Orthologs</b>	<a href="#">human</a> <a href="#">all</a>

# Transcript information (Ensembl)

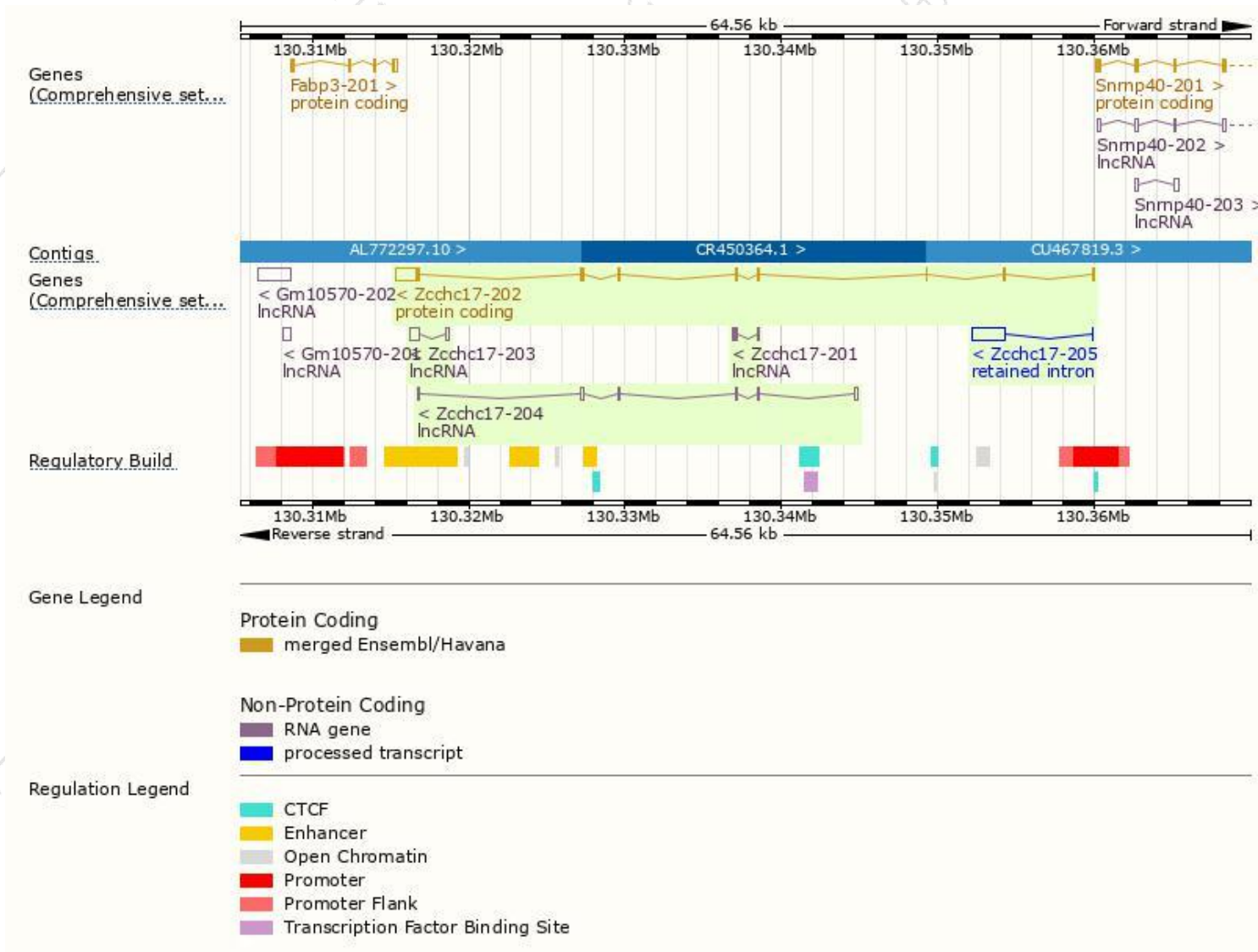
The gene has 5 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Zcchc17-202	<a href="#">ENSMUST00000134159.2</a>	2113	<a href="#">241aa</a>	Protein coding	<a href="#">CCDS38891</a>	<a href="#">Q3TG23</a> <a href="#">Q9ESX4</a>	TSL:1 GENCODE basic APPRIS P1
Zcchc17-205	<a href="#">ENSMUST00000167964.2</a>	2130	No protein	Retained intron	-	-	TSL:1
Zcchc17-203	<a href="#">ENSMUST00000141615.1</a>	762	No protein	lncRNA	-	-	TSL:3
Zcchc17-204	<a href="#">ENSMUST00000149755.8</a>	708	No protein	lncRNA	-	-	TSL:3
Zcchc17-201	<a href="#">ENSMUST00000129840.1</a>	286	No protein	lncRNA	-	-	TSL:5

The strategy is based on the design of *Zcchc17-202* transcript,The transcription is shown below



# Genomic location distribution

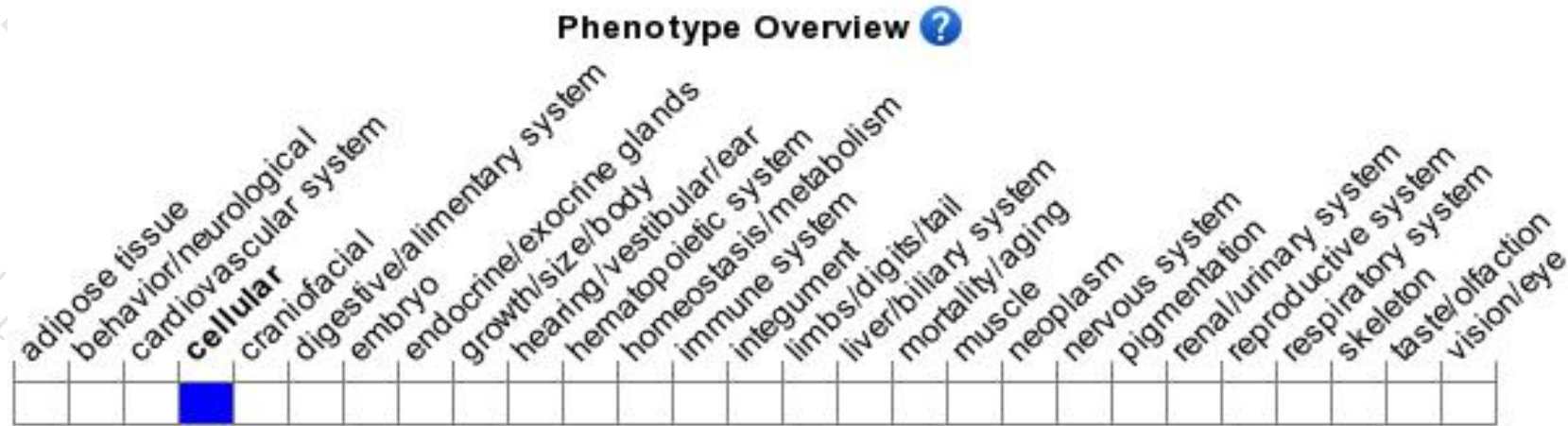




# Protein domain



# 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, Specific KO of the short isoform reduces osteogenic differentiation of mesenchymal stem cells and results in early cellular senescence in the embryonic notochord and forelimb bones.

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

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