

Ctns Cas9-KO Strategy

Designer: Xueting Zhang

Reviewer: Yanhua Shen

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Project Overview

Project Name

Ctns

Project type

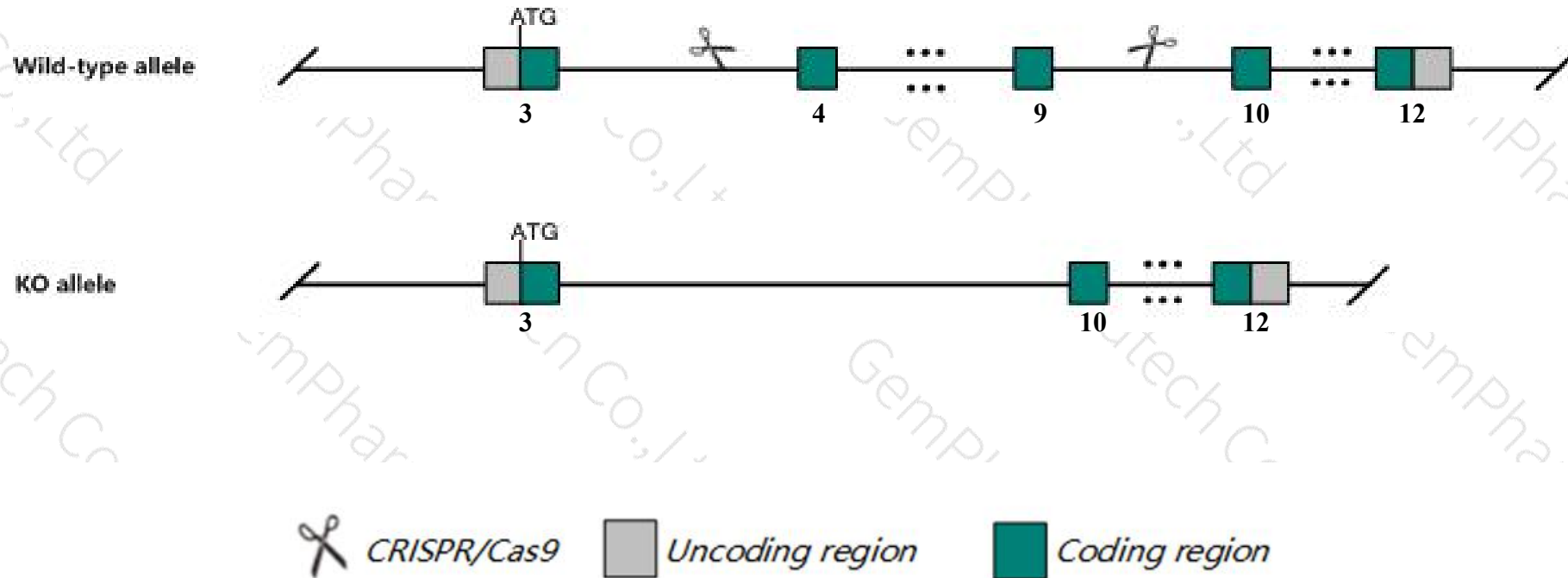
Cas9-KO

Strain background

C57BL/6JGpt

Knockout strategy

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



- The *Ctns* gene has 5 transcripts. According to the structure of *Ctns* gene, exon4-exon9 of *Ctns*-202 (ENSMUST00000108476.7) transcript is recommended as the knockout region. The region contains 620bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Ctns* gene. The brief process is as follows: CRISPR/Cas9 system w

- According to the existing MGI data, Homozygotes for a targeted null mutation exhibit increased intracellular cystine, progressive accumulation of cystine crystals, occasional muscle impairment, reduced exploratory activity, osteoporosis, and lowered electroretinogram amplitude.
- The knockout region is near to the N-terminal of *Shpk* gene, this strategy may influence the regulatory function of the N-terminal of *Shpk* gene.
- The *Ctns* 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 the gene knockout on gene transcription, RNA splicing and protein translation cannot be predicted at the existing technology level.

Gene information (NCBI)

Ctns cystinosis, nephropathic [*Mus musculus* (house mouse)]

Gene ID: 83429, updated on 19-Nov-2019

Summary

- Official Symbol** Ctns provided by [MGI](#)
- Official Full Name** cystinosis, nephropathic provided by [MGI](#)
- Primary source** [MGI:MGI:1932872](#)
- See related** [Ensembl:ENSMUSG00000005949](#)
- 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** A195360; AW049661
- Expression** Ubiquitous expression in kidney adult (RPKM 8.3), mammary gland adult (RPKM 7.9) and 28 other tissues [See more](#)
- Orthologs** [human](#) [all](#)

Genomic context

Location: 11; 11 B4

See Ctns in [Genome Data Viewer](#)

Exon count: 14

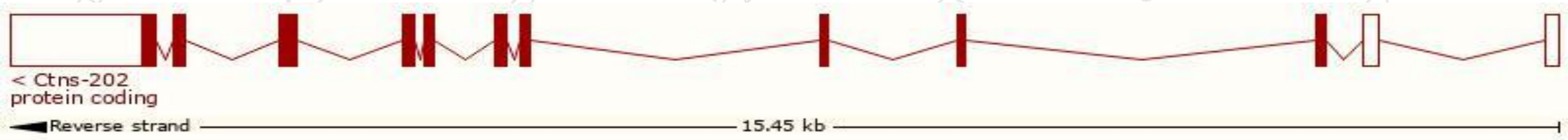
Annotation release	Status	Assembly	Chr	Location
108	current	GRCm38.p6 (GCF_000001635.26)	11	NC_000077.6 (73183133..73199115, complement)
Build 37.2	previous assembly	MGSCv37 (GCF_000001635.18)	11	NC_000077.5 (72996635..73012521, complement)

Transcript information (Ensembl)

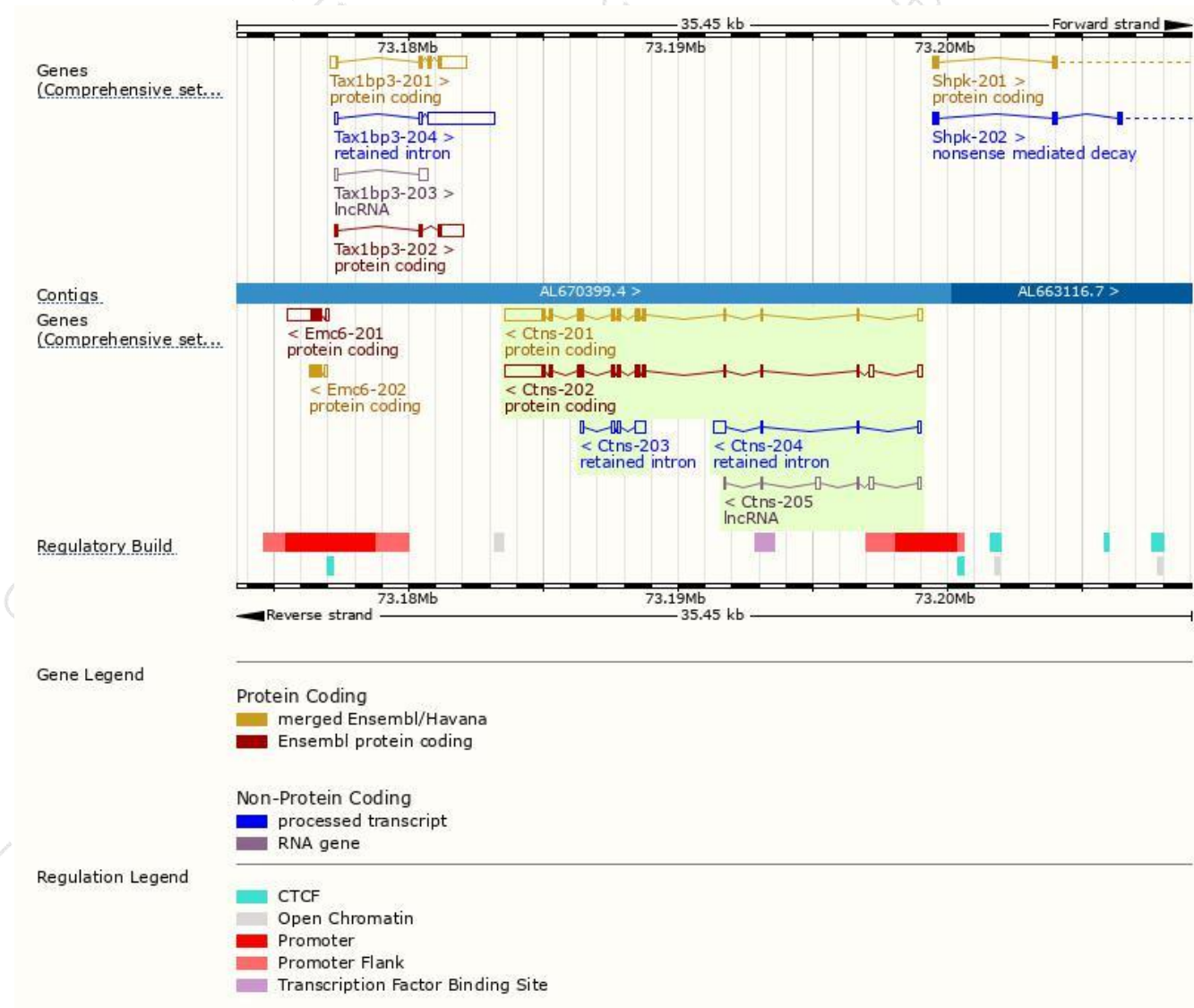
The gene has 5 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Ctns-202	ENSMUST00000108476.7	2723	367aa	Protein coding	CCDS25001	P57757 Q542U5	TSL:1 GENCODE basic APPRIS P1
Ctns-201	ENSMUST00000006103.8	2570	367aa	Protein coding	CCDS25001	P57757 Q542U5	TSL:1 GENCODE basic APPRIS P1
Ctns-204	ENSMUST00000144658.7	715	No protein	Retained intron	-	-	TSL:2
Ctns-203	ENSMUST00000130101.1	705	No protein	Retained intron	-	-	TSL:3
Ctns-205	ENSMUST00000150468.1	600	No protein	lncRNA	-	-	TSL:3

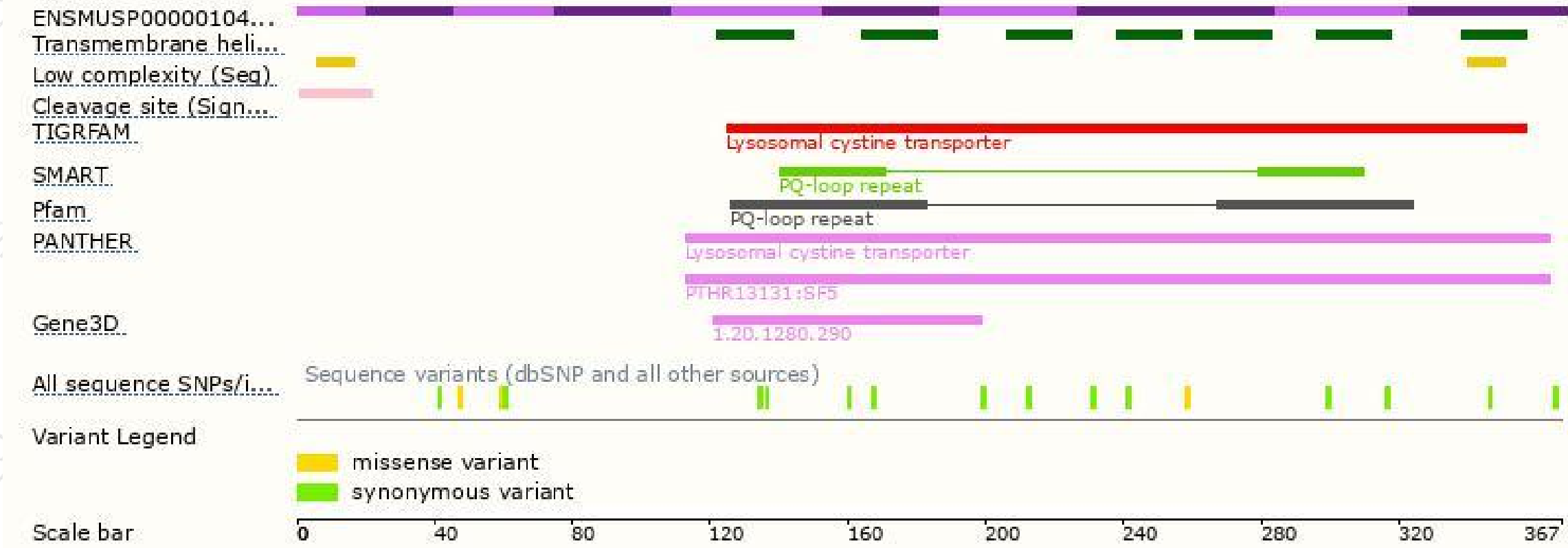
The strategy is based on the design of *Ctns-202* transcript,The transcription is shown below



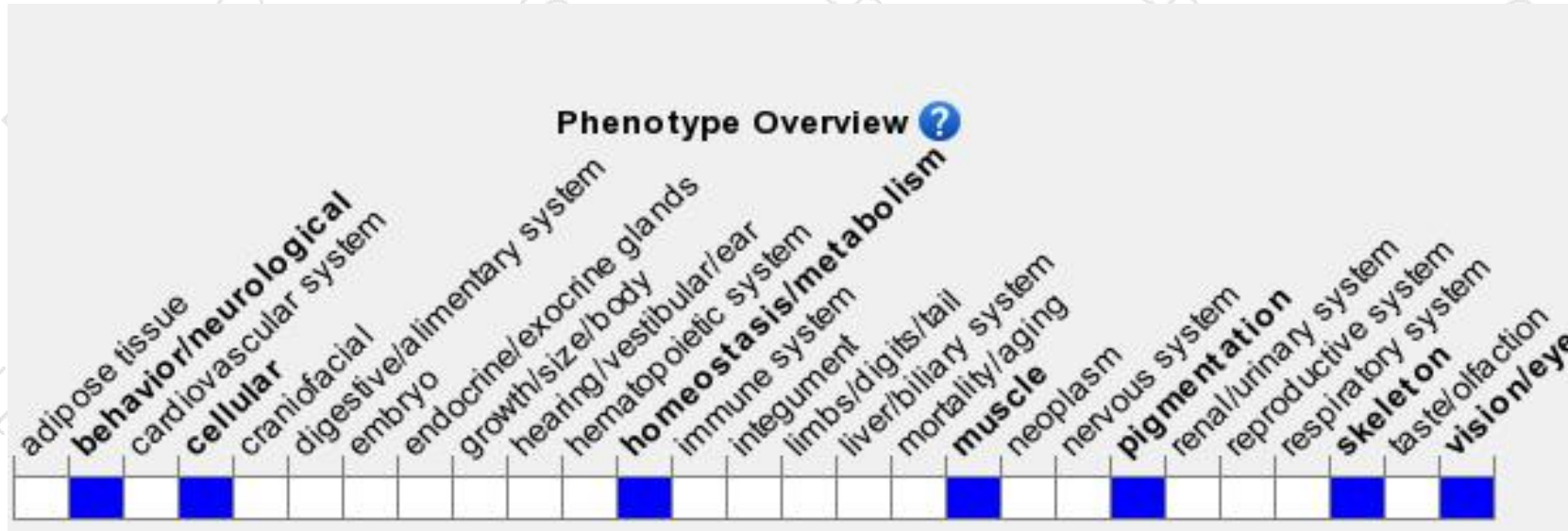
Genomic location distribution



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, Homozygotes for a targeted null mutation exhibit increased intracellular cystine, progressive accumulation of cystine crystals, occasional muscle impairment, reduced exploratory activity, osteoporosis, and lowered electroretinogram amplitude.

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

Tel: 400-9660890

