Chst14 Cas9-KO Strategy

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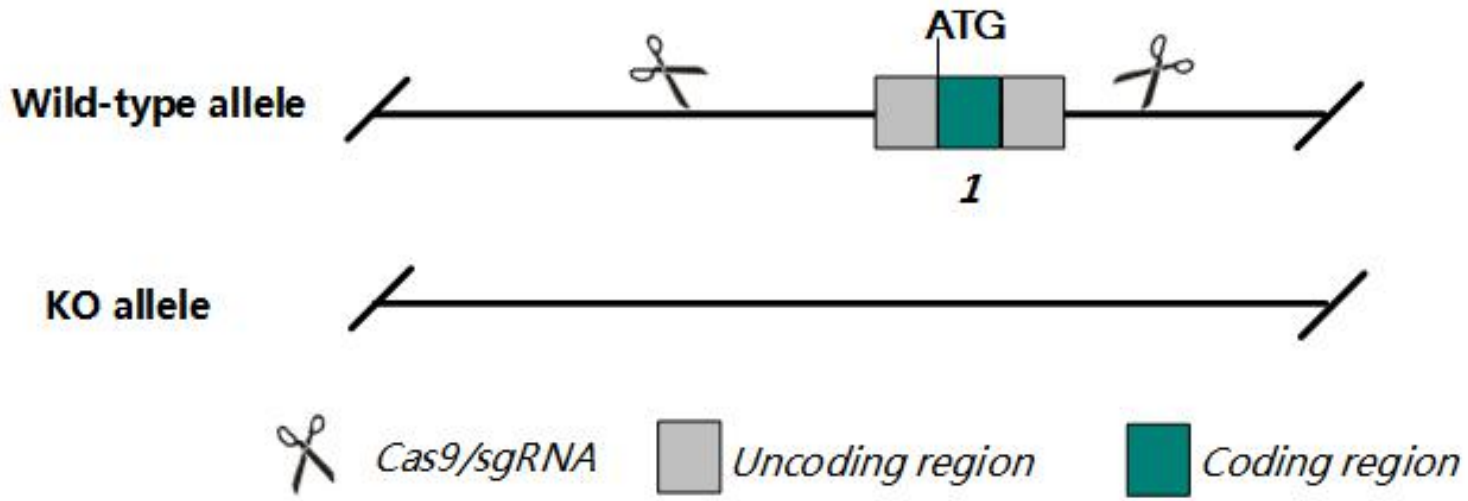
Project Overview

Project Name	***Chst14***
Project type	**Cas9-KO**
Strain background	**C57BL/6JGpt**

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Chst14* gene. The schematic diagram is as follows:



Technical routes

➢ The *Chst14* gene has 2 transcripts. According to the structure of *Chst14* gene, exon1 of *Chst14-201* (ENSMUST00000099546.5) transcript is recommended as the knockout region.The region contains all the coding sequence. Knock out the region will result in disruption of protein function.

➢ In this project we use CRISPR/Cas9 technology to modify *Chst14* gene. The brief process is as follows: gRNA was transcribed in vitro.Cas9 and gRNA 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.

Notice

➢ According to the existing MGI data, Mice homozygous for a knock-out allele exhibit accelerated peripheral nerve regeneration, decreased body weight, premature death, fragile skin and background sensitive abnormal fertility, kinked tail and tooth growth.

➢ The knockout region is near to the C-terminal of *Bahd1* gene,this strategy may influence the regulatory function of the C-terminal of *Bahd1* gene.

➢ The *Chst14* gene is located on the Chr2. 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）

集萃药康 GemPharmatech

Chst14 carbohydrate sulfotransferase 14 [*Mus musculus* (house mouse)]

Gene ID: 72136, updated on 12-Aug-2019

Summary

Official Symbol	Chst14 provided by MGI
Official Full Name	carbohydrate sulfotransferase 14 provided by MGI
Primary source	MGI:MGI:1919386
See related	Ensembl:ENSMUSG00000074916
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	D4st1; D4ST-1; 2600016L03Rik
Orthologs	human all

Genomic context

Location: 2; 2 E5

See Chst14 in Genome Data Viewer

Exon count: 1

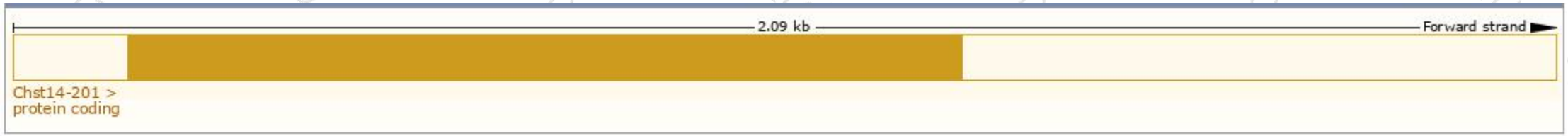
Annotation release	Status	Assembly	Chr	Location
108	current	GRCm38.p6 (GCF_000001635.26)	2	NC_000068.7 (118926497..118928585)
Build 37.2	previous assembly	MGSCv37 (GCF_000001635.18)	2	NC_000068.6 (118752233..118754321)

Transcript information（Ensembl）

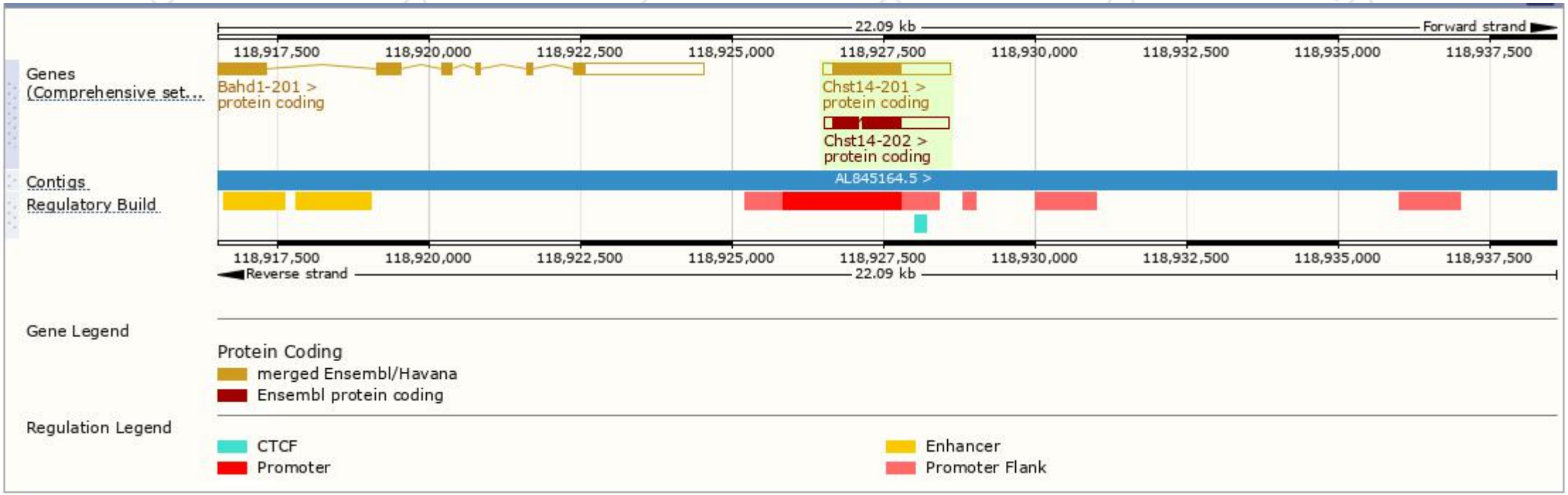
The gene has 2 transcripts,all the transcripts are shown below:

Name	Transcript ID ▲	bp	Protein	Biotype	CCDS	UniProt	Flags
Chst14-201	ENSMUST00000099546.5	2090	376aa	Protein coding	CCDS16587	Q80V53	TSL:NA GENCODE basic APPRIS P1
Chst14-202	ENSMUST00000110837.1	1991	351aa	Protein coding	-	A2AQV2	TSL:1 GENCODE basic

The strategy is based on the design of *Chst14-201* transcript,The transcription is shown below

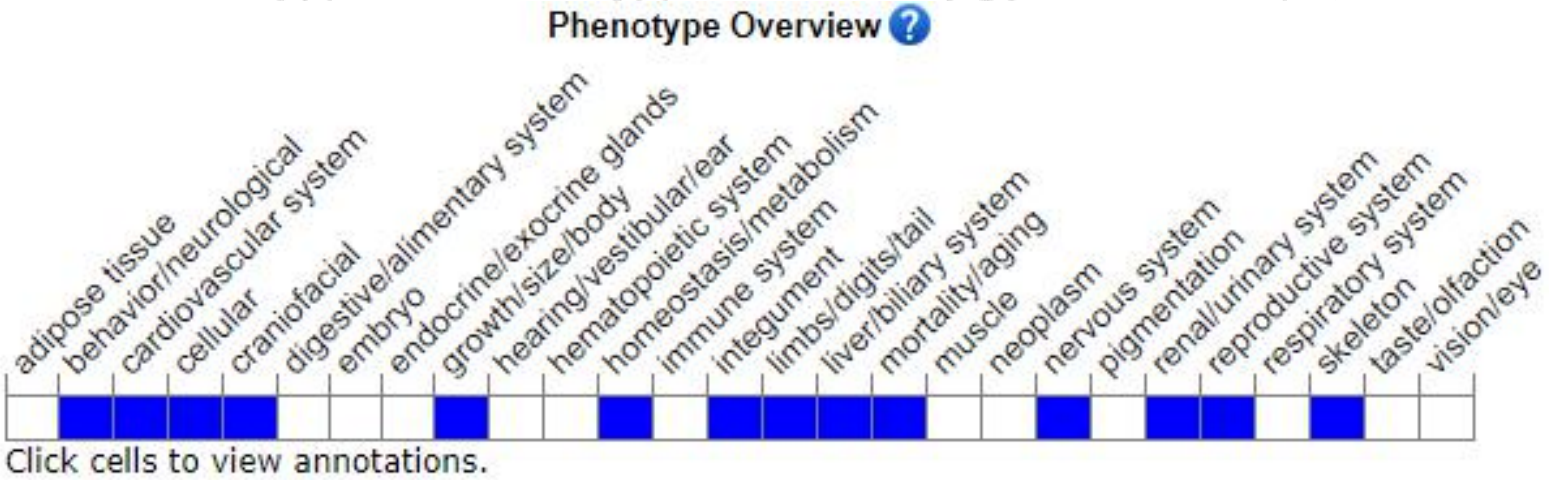


Genomic location distribution



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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