

***Cdh6* Cas9-KO Strategy**

Designer: Xueting Zhang

Reviewer: Yanhua Shen

Date: 2019-11-24

Project Overview

Project Name

Cdh6

Project type

Cas9-KO

Strain background

C57BL/6JGpt

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Cdh6* gene. The schematic diagram is as follows:



- The *Cdh6* gene has 2 transcripts. According to the structure of *Cdh6* gene, exon3-exon5 of *Cdh6-201* (ENSMUST00000036439.5) transcript is recommended as the knockout region. The region contains 583bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Cdh6* gene. The brief process is as follows: CRISPR/Cas9 system

- According to the existing MGI data, Mice homozygous for a null allele exhibit delayed mesenchyme to epithelial conversion and loss of nephrons.
- The *Cdh6* gene is located on the Chr15. 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)

Cdh6 cadherin 6 [*Mus musculus* (house mouse)]

Gene ID: 12563, updated on 12-Nov-2019

Summary

- Official Symbol

Cdh6 provided by MGI
- Official Full Name

cadherin 6 provided by MGI
- Primary source

MGI:MGI:107435
- See related

Ensembl:ENSMUSG00000039385
- 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

cad6
- Summary

This gene encodes a member of the cadherin family of calcium-dependent glycoproteins that mediate cell adhesion and regulate many morphogenetic events during development. The encoded preproprotein is further processed to generate a mature protein. Mice lacking the encoded protein exhibit delay in mesenchyme-to-epithelial conversion and a loss of nephrons. Multiple distinct genes of the cadherin family, including this gene, are found on chromosome 15. [provided by RefSeq, Oct 2015]
- Expression

Biased expression in frontal lobe adult (RPKM 1.6), limb E14.5 (RPKM 1.6) and 12 other tissues [See more](#)
- Orthologs

[human](#) [all](#)

Genomic context

Location: 15; 15 A1

Exon count: 13

See Cdh6 in [Genome Data Viewer](#)

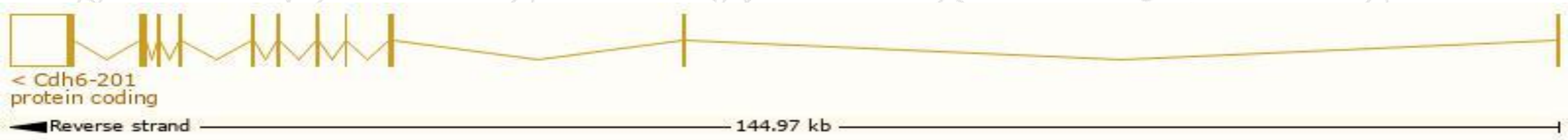
Annotation release	Status	Assembly	Chr	Location
108	current	GRCm38.p6 (GCF_000001635.26)	15	NC_000081.6 (13028699..13176407, complement)
Build 37.2	previous assembly	MGSCv37 (GCF_000001635.18)	15	NC_000081.5 (12963955..13103394, complement)

Transcript information (Ensembl)

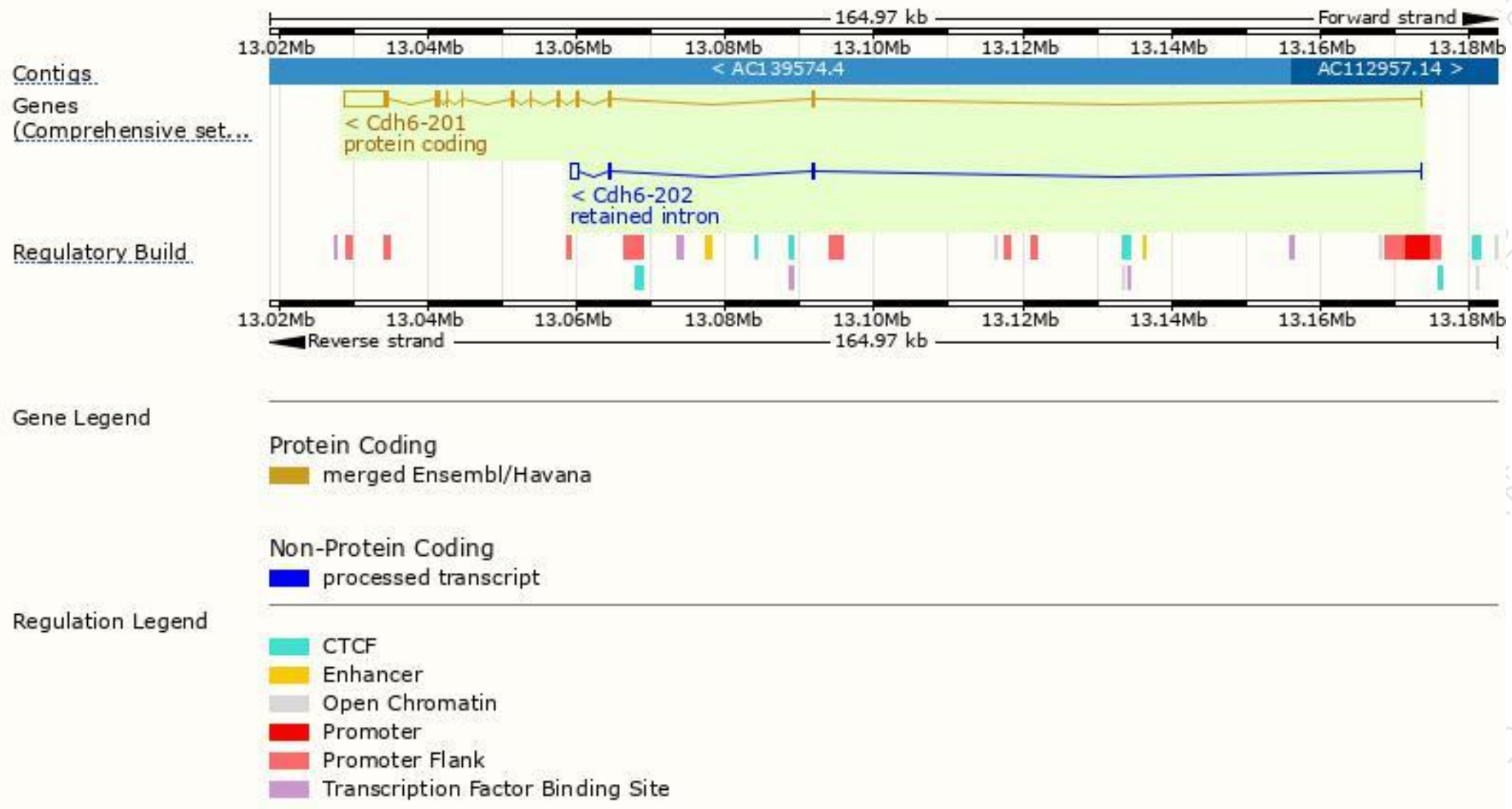
The gene has 2 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Cdh6-201	ENSMUST00000036439.5	8167	790aa	Protein coding	CCDS27393	P97326	TSL:5 GENCODE basic APPRIS P1
Cdh6-202	ENSMUST00000226917.1	1795	No protein	Retained intron	-	-	

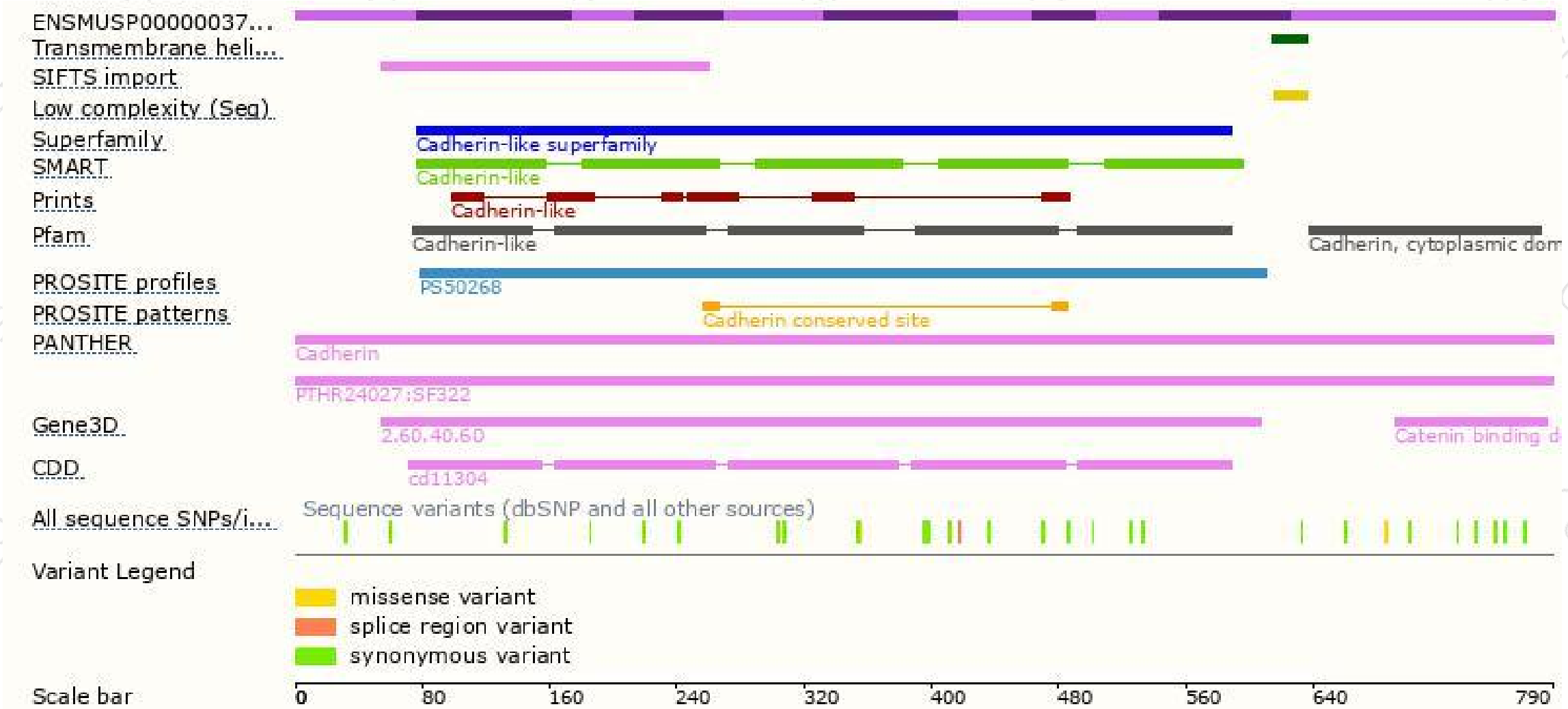
The strategy is based on the design of *Cdh6-201* transcript,The transcription is shown below



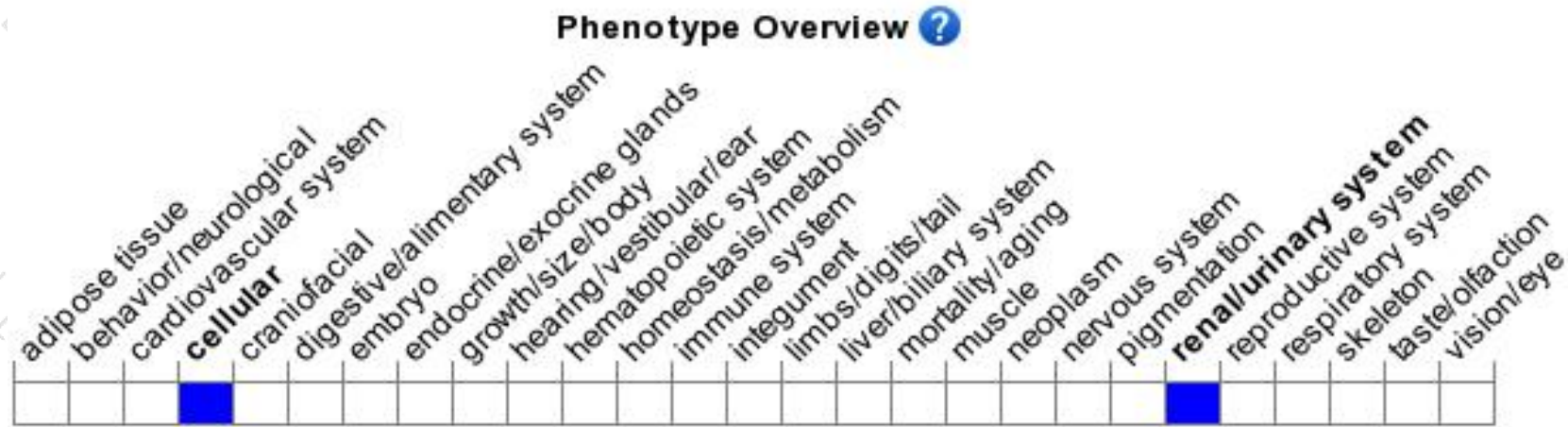
Genomic location distribution



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, Mice homozygous for a null allele exhibit delayed mesenchyme to epithelial conversion and loss of nephrons.

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

Tel: 400-9660890

