Cdh13 Cas9-KO Strategy

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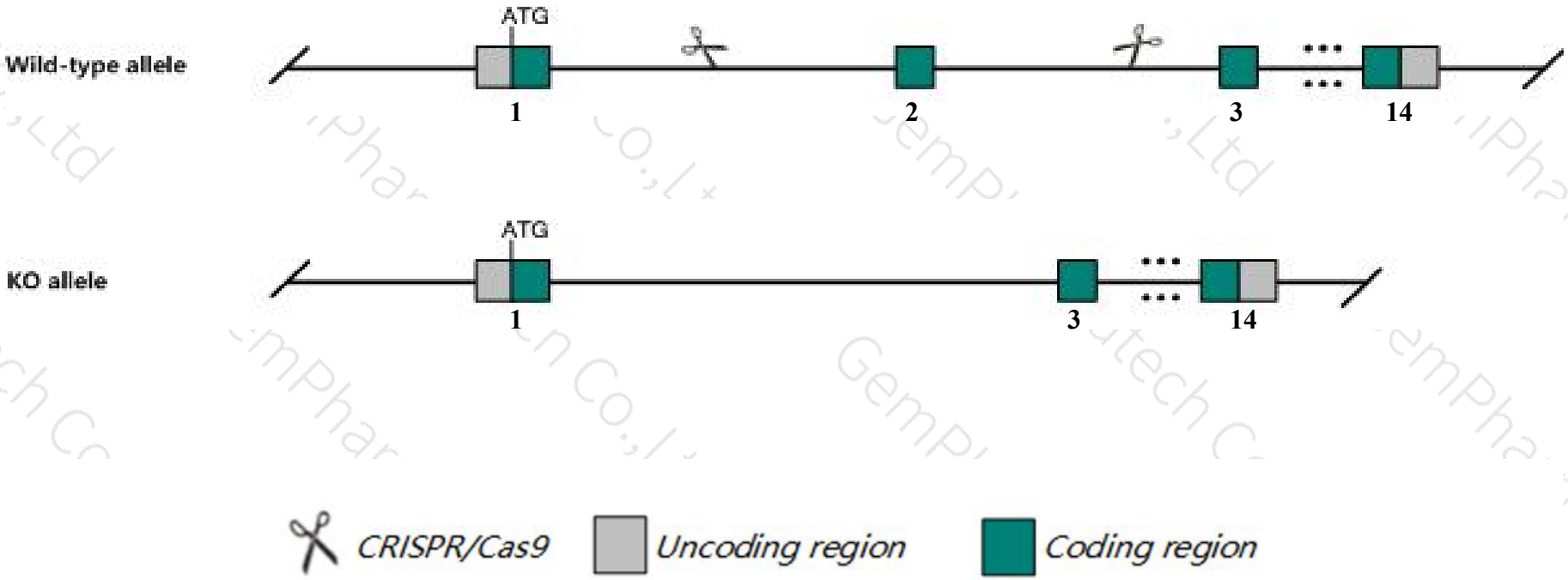
Project Overview

Project Name	***Cdh13***
Project type	**Cas9-KO**
Strain background	**C57BL/6JGpt**

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Cdh13* gene. The schematic diagram is as follows:



Technical routes

➢ The *Cdh13* gene has 8 transcripts. According to the structure of *Cdh13* gene, exon2 of *Cdh13-201* (ENSMUST00000117160.1) transcript is recommended as the knockout region.The region contains 112bp coding sequence. Knock out the region will result in disruption of protein function.

➢ In this project we use CRISPR/Cas9 technology to modify *Cdh13* gene. The brief process is as follows: CRISPR/Cas9 system v

Notice

- According to the existing MGI data,Mice homozygous for a null allele exhibit decreased retinal neovascularization and increased adiponectin levels.

- The *Cdh13* gene is located on the Chr8. 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）

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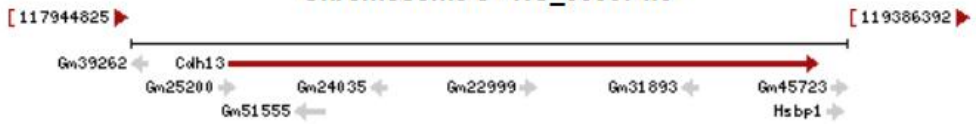
Cdh13 cadherin 13 [*Mus musculus* (house mouse)]

Gene ID: 12554, updated on 12-Nov-2019

Summary

Official Symbol	Cdh13 provided by MGI
Official Full Name	cadherin 13 provided by MGI
Primary source	MGI:MGI:99551
See related	Ensembl:ENSMUSG00000031841
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	Cdht; Tcad; 4932416G01Rik
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. This gene is highly expressed in the vasculature including endothelial cells, smooth muscle cells and pericytes, where the encoded protein binds to adiponectin and has been implicated in the modulation of angiogenesis. Multiple distinct genes of the cadherin family, including this gene, are found on chromosome 8. [provided by RefSeq, Nov 2015]
Expression	Broad expression in heart adult (RPKM 39.2), CNS E18 (RPKM 17.5) and 16 other tissues See more
Orthologs	human all

Chromosome 8 - NC_000074.6



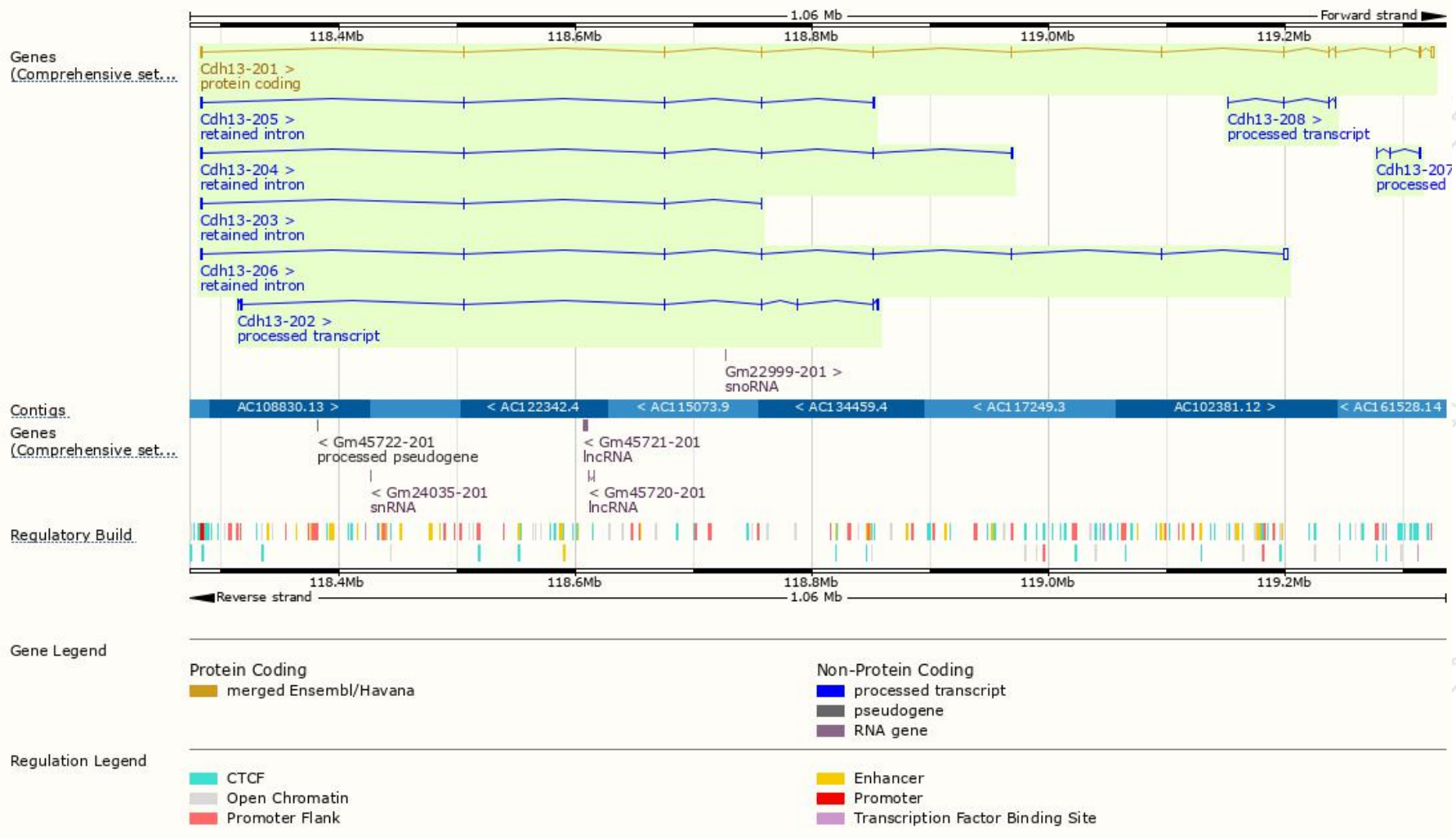
Transcript information（Ensembl）

The gene has 8 transcripts,all transcripts are shown below:

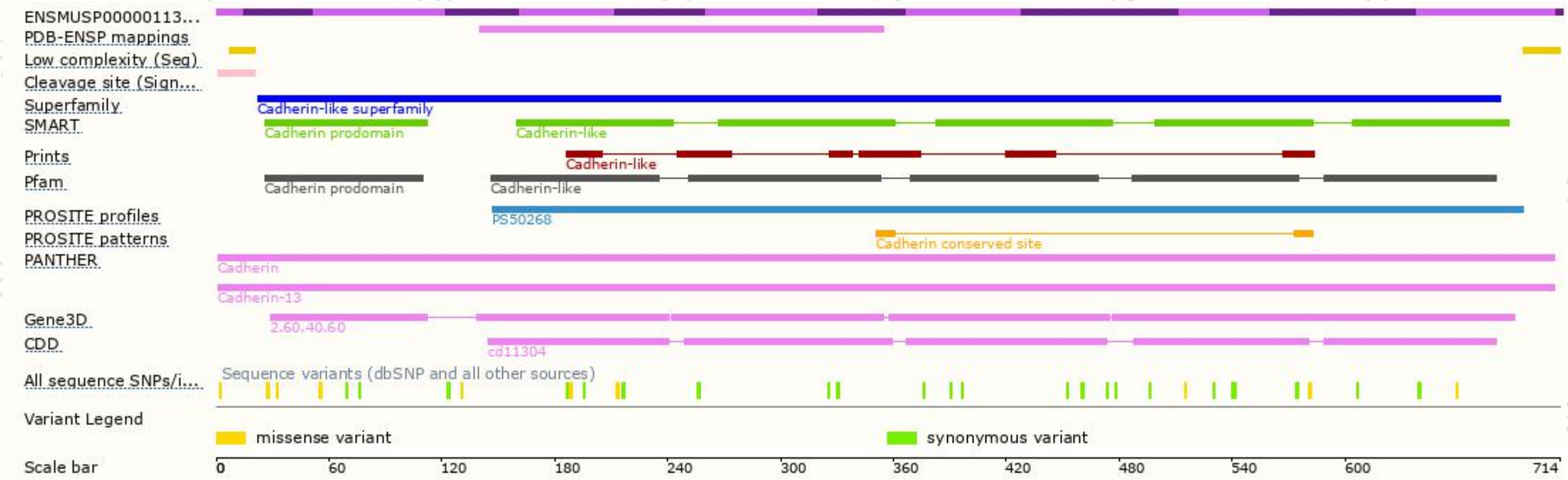
Name	Transcript ID	bp	Protein	Translation ID	Biotype	CCDS	UniProt	Flags
Cdh13-201	ENSMUST00000117160.1	3785	714aa	ENSMUSP00000113527.1	Protein coding	CCDS52682	Q9WTR5	TSL:1 GENCODE basic APPRIS P1
Cdh13-206	ENSMUST00000148836.7	4565	No protein	-	Retained intron	-	-	TSL:2
Cdh13-205	ENSMUST00000145849.7	1622	No protein	-	Retained intron	-	-	TSL:2
Cdh13-204	ENSMUST00000142551.7	1535	No protein	-	Retained intron	-	-	TSL:2
Cdh13-203	ENSMUST00000129548.7	715	No protein	-	Retained intron	-	-	TSL:2
Cdh13-202	ENSMUST00000123567.1	2708	No protein	-	lncRNA	-	-	TSL:2
Cdh13-207	ENSMUST00000151842.1	620	No protein	-	lncRNA	-	-	TSL:3
Cdh13-208	ENSMUST00000212476.1	580	No protein	-	lncRNA	-	-	TSL:3

The strategy is based on the design of *Cdh13-201* transcript,The transcription is shown below

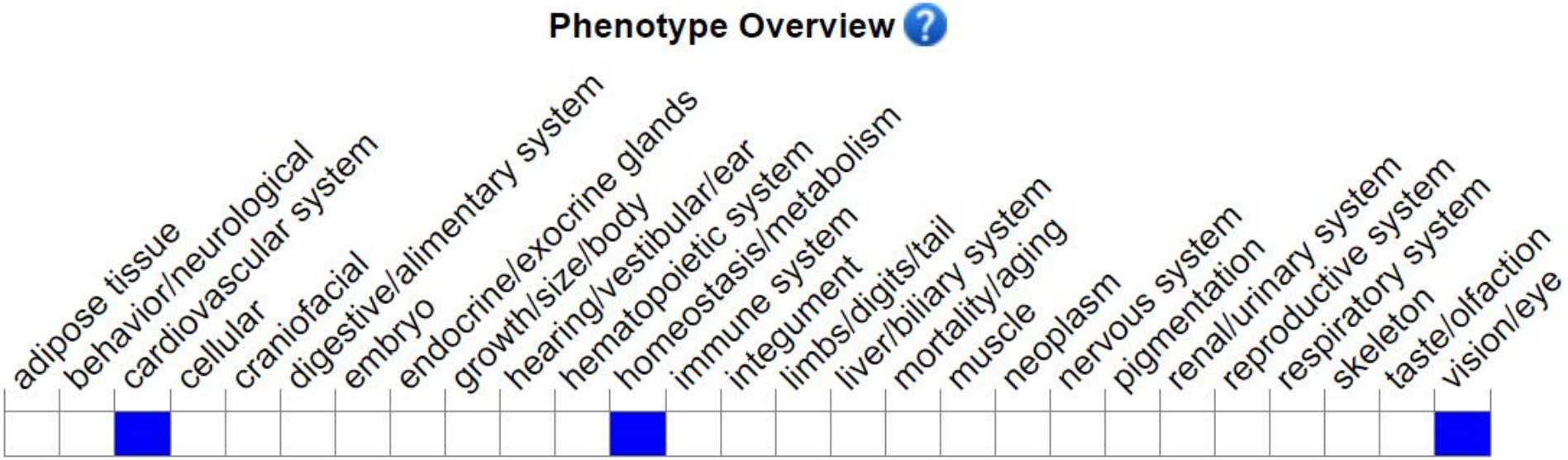
Genomic location distribution



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 decreased retinal neovascularization and increased adiponectin levels.

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

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