

Unc5c Cas9-KO Strategy

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Overview

Target Gene Name

- Unc5c

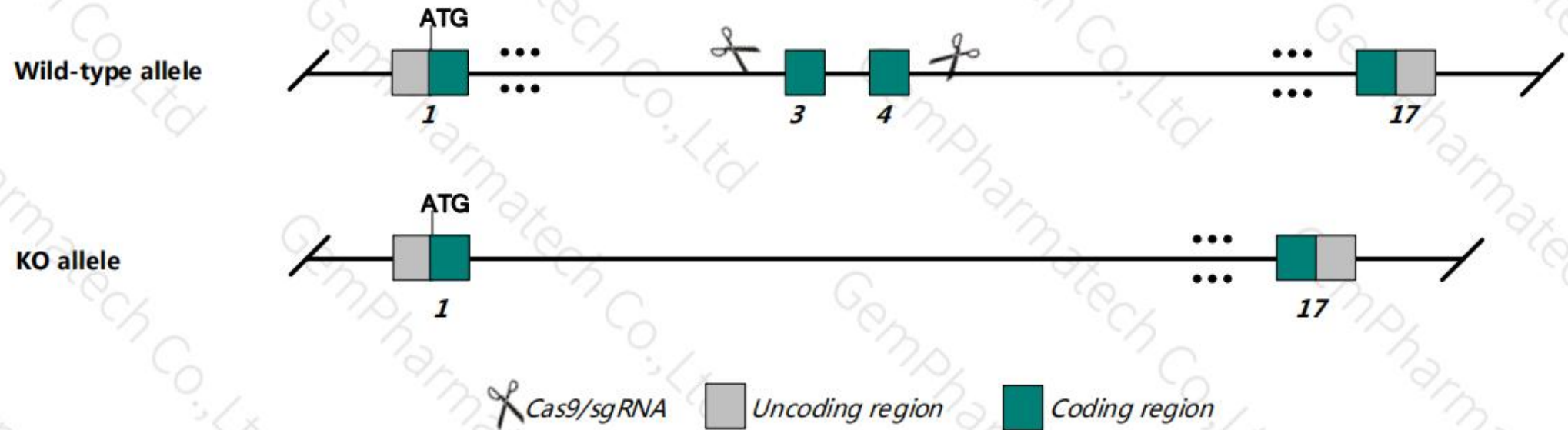
Project Type

- Cas9-KO

Genetic Background

- C57BL/6JGpt

Strain Strategy



Schematic representation of CRISPR-Cas9 engineering used to edit the *Unc5c* gene.

Technical Information

- The *Unc5c* gene has 8 transcripts. According to the structure of *Unc5c* gene, exon3-4 of *Unc5c-201* (ENSMUST00000075282.10) transcript is recommended as the knockout region. The region contains 248bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR-Cas9 technology to modify *Unc5c* gene. The brief process is as follows: gRNAs were transcribed in vitro. Cas9 and gRNAs 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 on-target amplicon sequencing. A stable F1-generation mouse strain was obtained by mating positive F0-generation mice with C57BL/6JGpt mice and confirmation of the desired mutant allele was carried out by PCR and on-target amplicon sequencing.

Gene Information

Unc5c unc-5 netrin receptor C [*Mus musculus* (house mouse)]

Gene ID: 22253, updated on 22-Dec-2022

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Summary

Official Symbol [Unc5c](#) provided by [MGI](#)
Official Full Name [unc-5 netrin receptor C](#) provided by [MGI](#)
Primary source [MGI:MGI:1095412](#)
See related [Ensembl:ENSMUSG00000059921](#) [AllianceGenome:MGI:1095412](#)
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 rcm; Unc5h3; B130051O18Rik
Summary Enables netrin receptor activity involved in chemorepulsion and tubulin binding activity. Involved in chemorepulsion of axon and netrin-activated signaling pathway. Acts upstream of or within nervous system development; positive regulation of apoptotic process; and regulation of cell migration. Located in several cellular components, including filopodium; growth cone; and lamellipodium. Is expressed in several structures, including brain; embryo mesenchyme; ovary; sensory organ; and skeleton. Orthologous to human UNC5C (unc-5 netrin receptor C). [provided by Alliance of Genome Resources, Apr 2022]
Expression Biased expression in cerebellum adult (RPKM 4.5), limb E14.5 (RPKM 4.2) and 11 other tissues [See more](#)
Orthologs [human](#) [all](#)
NEW Try the new [Gene table](#)
Try the new [Transcript table](#)

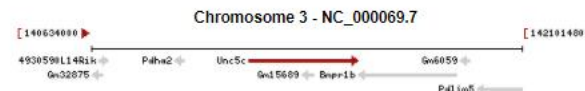
Genomic context

Location: 3 H1; 3 65.57 cM

See Unc5c in [Genome Data Viewer](#)

Exon count: 17

Annotation release	Status	Assembly	Chr	Location
109	current	GRCm39 (GCF_000001635.27)	3	NC_000069.7 (141171325..141540685)
108.20200622	previous assembly	GRCm38.p6 (GCF_000001635.26)	3	NC_000069.6 (141465564..141834924)



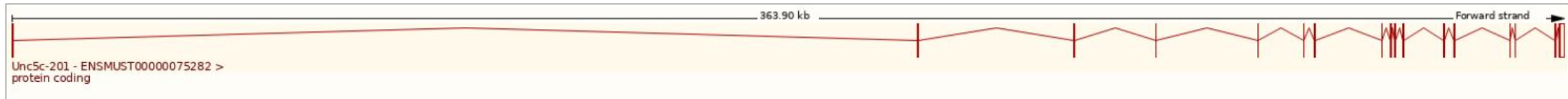
Source: <https://www.ncbi.nlm.nih.gov/>

Transcript Information

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

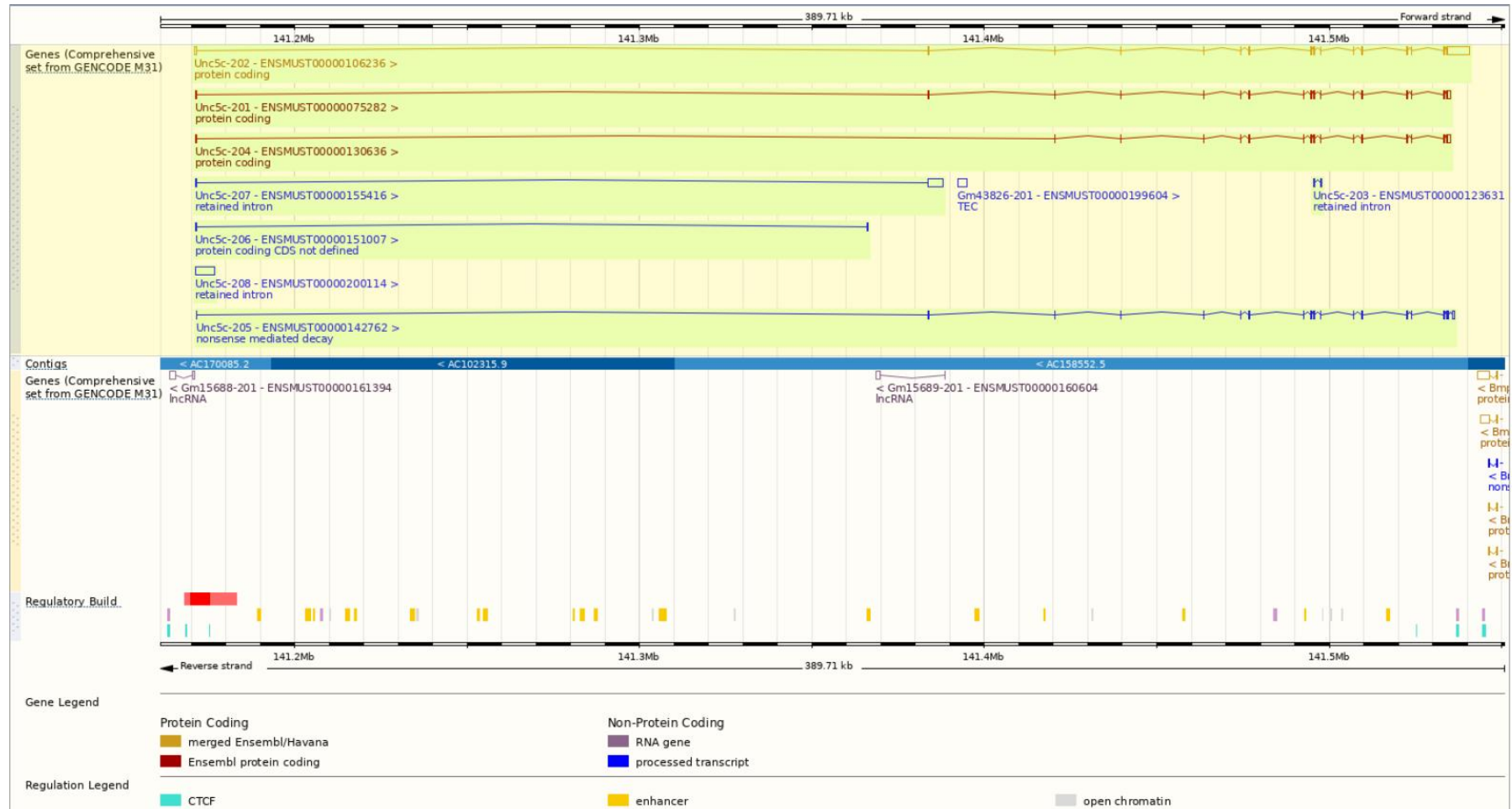
Transcript ID	Name	bp	Protein	Biotype	CCDS	UniProt Match	Flags
ENSMUST00000075282.10	Unc5c-201	3890	950aa	Protein coding	CCDS80034	O08747-2	Ensembl Canonical GENCODE basic APPRIS P4 TSL:1
ENSMUST00000106236.9	Unc5c-202	9646	931aa	Protein coding	CCDS17873	O08747-1	GENCODE basic APPRIS ALT1 TSL:1
ENSMUST00000130636.8	Unc5c-204	3595	876aa	Protein coding		E9PVI4	GENCODE basic TSL:1
ENSMUST00000142762.2	Unc5c-205	3498	950aa	Nonsense mediated decay	CCDS80034	O08747-2	TSL:1
ENSMUST00000151007.6	Unc5c-206	357	No protein	Protein coding CDS not defined		-	TSL:3
ENSMUST00000200114.2	Unc5c-208	5330	No protein	Retained intron		-	TSL:NA
ENSMUST00000155416.5	Unc5c-207	4577	No protein	Retained intron		-	TSL:2
ENSMUST00000123631.2	Unc5c-203	417	No protein	Retained intron		-	TSL:3

The strategy is based on the design of *Unc5c-201* transcript, the transcription is shown below:

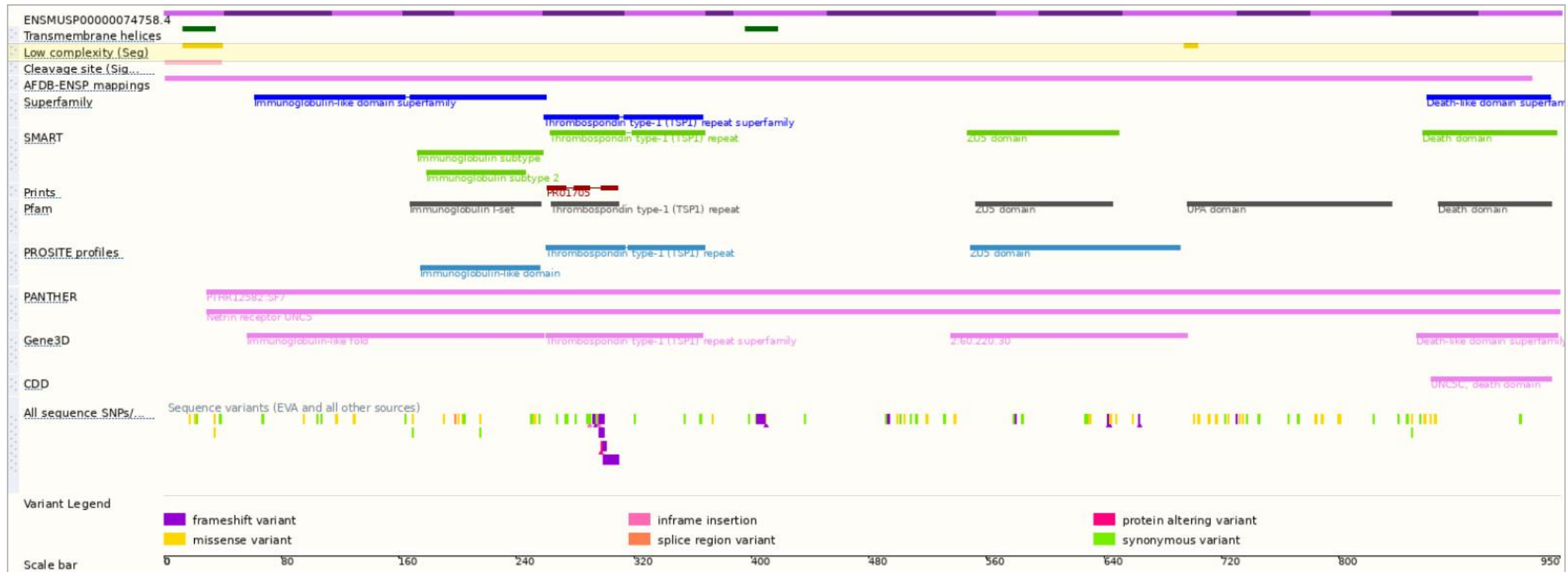


Source: <https://www.ensembl.org>

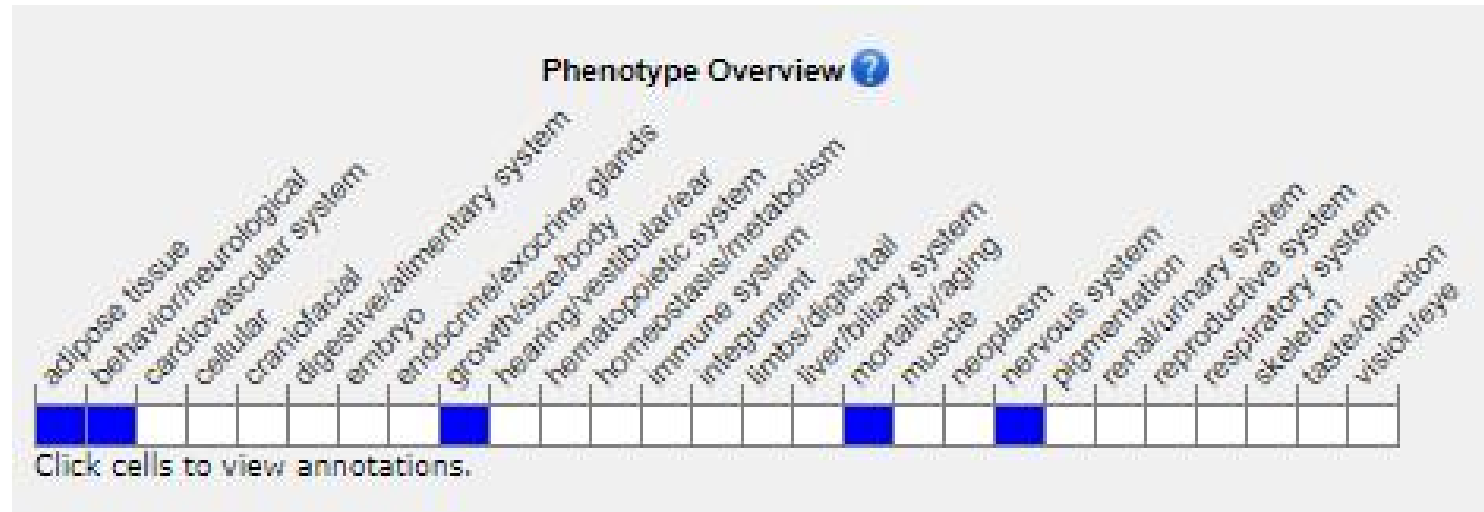
Genomic Information



Protein Information



Mouse Phenotype Information (MGI)



- Mutants exhibit ataxia, and reduced size early in life. Mutants exhibit cerebellar defects including reduced size and ectopic cerebellar cells in the midbrain.

Important Information

- According to the MGI information and breeding data, the gene knockout homozygote dies during the embryonic stage.
- *Unc5c* is located on Chr3. If the knockout mice are crossed with other mouse strains to obtain double homozygous mutant offspring, please avoid the situation that the second gene is on the same chromosome.
- This Strategy is designed based on genetic information in existing databases. Due to the complexity of biological processes, all risks of the mutation on gene transcription, RNA splicing and protein translation cannot be predicted at the existing technology level.