

Erc6 Cas9-KO Strategy

Designer:

Huimin Su

Reviewer:

Ruirui Zhang

Design Date:

2020-1-22

Project Overview

Project Name

Ercc6

Project type

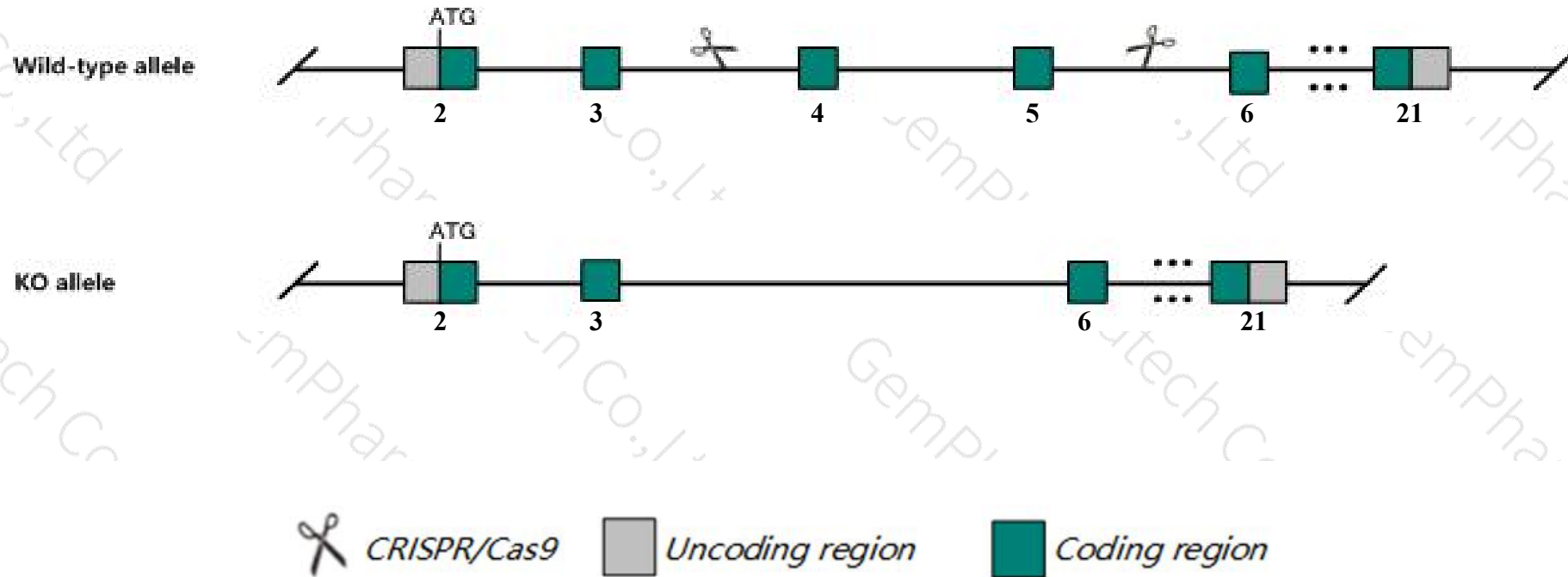
Cas9-KO

Strain background

C57BL/6JGpt

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Ercc6* gene. The schematic diagram is as follows:



- The *Ercc6* gene has 6 transcripts. According to the structure of *Ercc6* gene, exon4-exon5 of *Ercc6-201* (ENSMUST00000066807.7) transcript is recommended as the knockout region. The region contains 842bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Ercc6* gene. The brief process is as follows: CRISPR/Cas9 system

- According to the existing MGI data, Homozygous mutant mice exhibit UV sensitivity, inactivation of transcription-coupled repair, increased incidence of induced skin and eye tumors, circling behavior, impaired coordination and lower body weight.
- The *Ercc6* gene is located on the Chr14. 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)

Ercc6 excision repair cross-complementing rodent repair deficiency, complementation group 6 [*Mus musculus* (house mouse)]

Gene ID: 319955, updated on 17-Nov-2019

Summary

- Official Symbol** Ercc6 provided by [MGI](#)
- Official Full Name** excision repair cross-complementing rodent repair deficiency, complementation group 6 provided by [MGI](#)
- Primary source** [MGI:MGI:1100494](#)
- See related** [Ensembl:ENSMUSG00000054051](#)
- 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** CSB; 4732403I04; C130058G22Rik
- Expression** Ubiquitous expression in CNS E11.5 (RPKM 3.9), CNS E14 (RPKM 3.4) and 28 other tissues [See more](#)
- Orthologs** [human](#) [all](#)

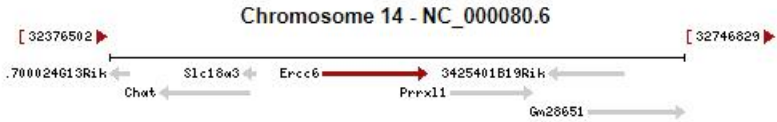
Genomic context

Location: 14; 14 B

See Ercc6 in [Genome Data Viewer](#)

Exon count: 24

Annotation release	Status	Assembly	Chr	Location
108	current	GRCm38.p6 (GCF_000001635.26)	14	NC_000080.6 (32513291..32580990)
Build 37.2	previous assembly	MGSCv37 (GCF_000001635.18)	14	NC_000080.5 (33326707..33394175)

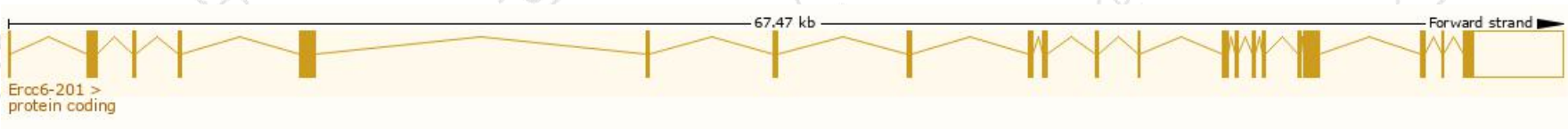


Transcript information (Ensembl)

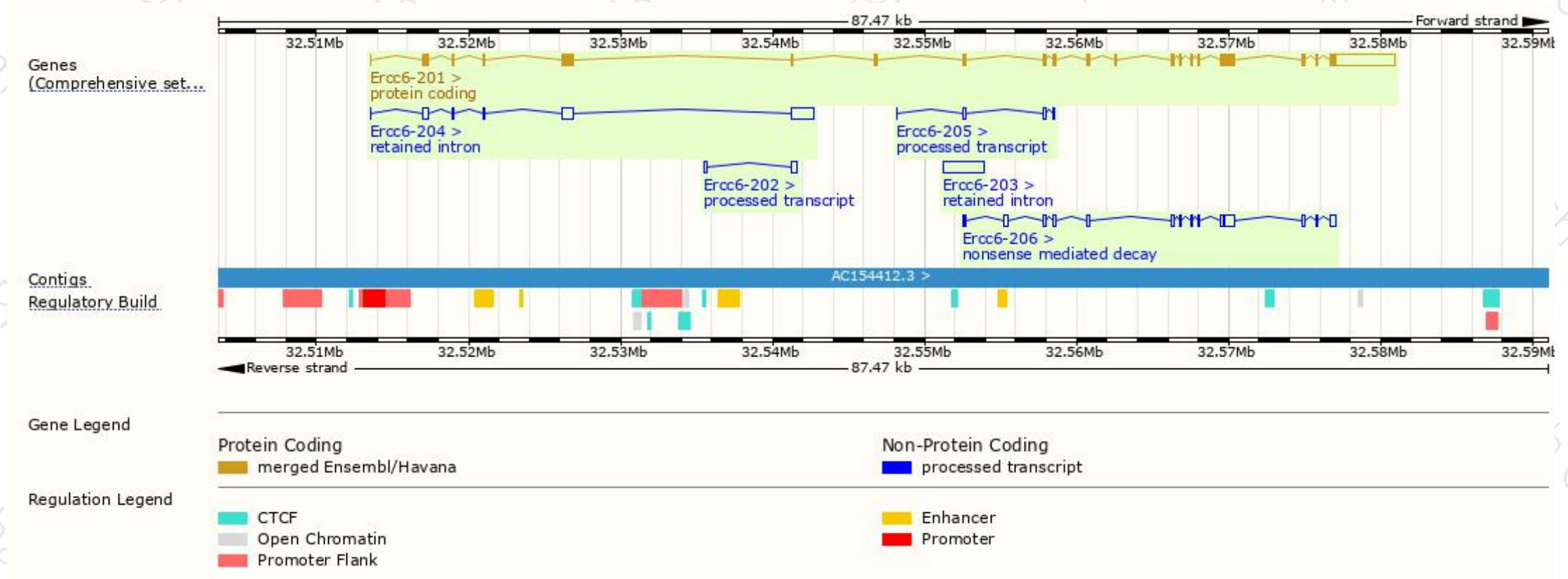
The gene has 6 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Ercc6-201	ENSMUST00000066807.7	8423	1481aa	Protein coding	CCDS36868	F8VPZ5	TSL:5 Gencode basic APPRIS P1
Ercc6-206	ENSMUST00000228549.1	2899	48aa	Nonsense mediated decay	-	A0A2I3BQP1	CDS 5' incomplete
Ercc6-202	ENSMUST00000226285.1	603	No protein	Processed transcript	-	-	-
Ercc6-205	ENSMUST00000228035.1	473	No protein	Processed transcript	-	-	-
Ercc6-204	ENSMUST00000228017.1	2991	No protein	Retained intron	-	-	-
Ercc6-203	ENSMUST00000227434.1	2705	No protein	Retained intron	-	-	-

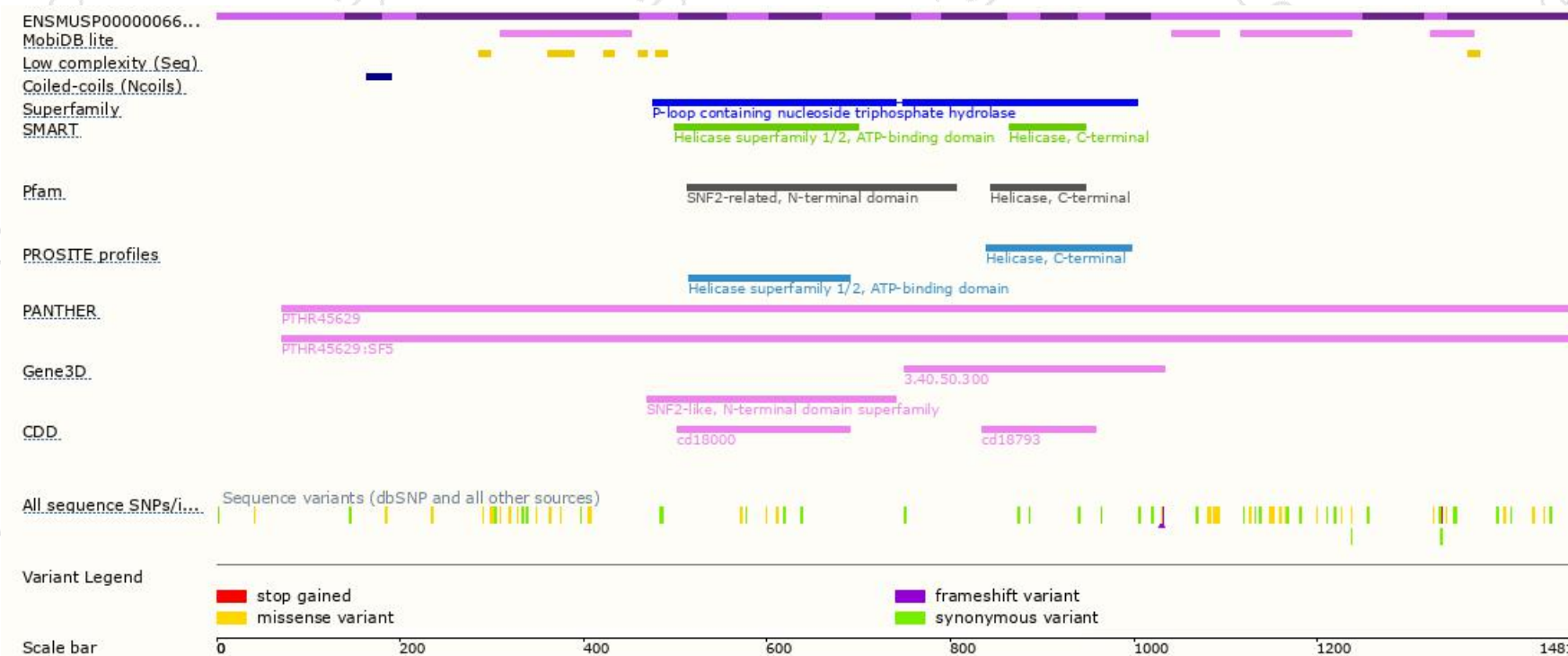
The strategy is based on the design of *Ercc6-201* transcript,The transcription is shown below



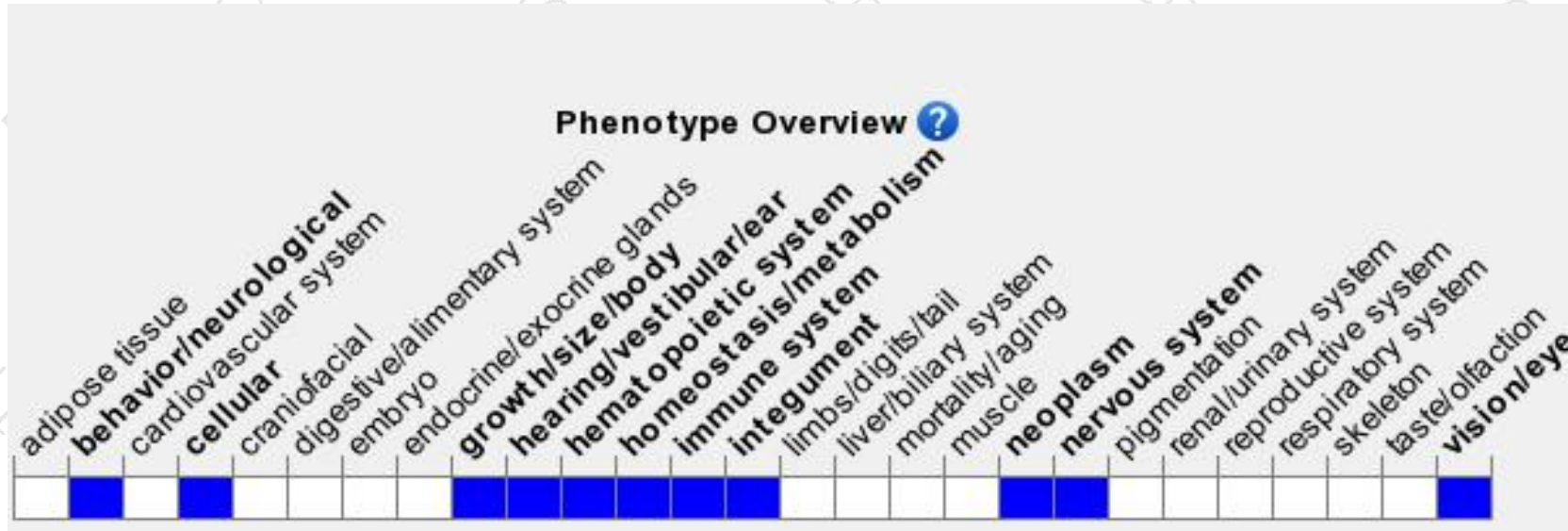
Genomic location distribution



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, Homozygous mutant mice exhibit UV sensitivity, inactivation of transcription-coupled repair, increased incidence of induced skin and eye tumors, circling behavior, impaired coordination and lower body weight.

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

Tel: 400-9660890

