

Zbed6 Cas9-KO Strategy

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Overview

Target Gene Name

- Zbed6

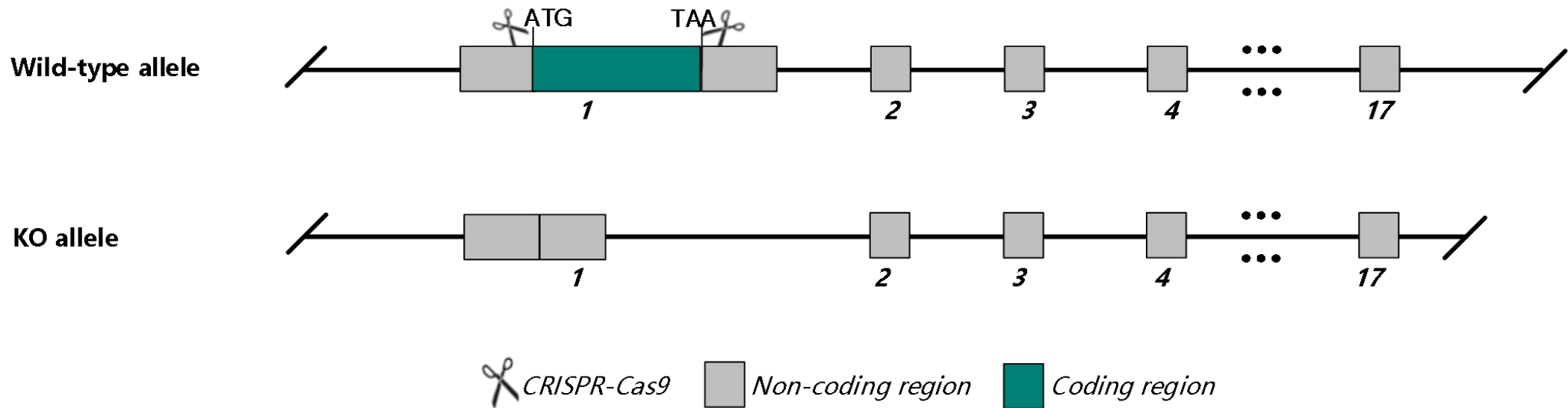
Project Type

- Cas9-KO

Genetic Background

- C57BL/6JGpt

Strain Strategy



Schematic representation of CRISPR-Cas9 engineering used to edit the *Zbed6* gene.

Technical Information

- The *Zbed6* gene has 1 transcript. According to the structure of *Zbed6* gene, exon1 of *Zbed6*-201 (ENSMUST00000179598.4) transcript is recommended as the knockout region. The region contains all of coding sequences. Knocking out the region will result in disruption of protein function.
- In this project we use CRISPR-Cas9 technology to modify *Zbed6* 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

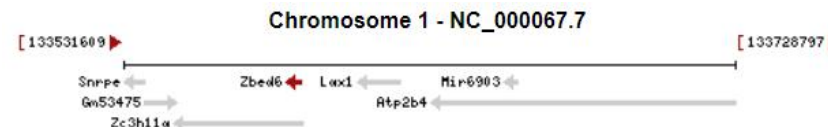
Zbed6 zinc finger, BED type containing 6 [*Mus musculus* (house mouse)]

[Download Datasets](#)

Gene ID: 667118, updated on 26-Sep-2022

Summary

Official Symbol	Zbed6 provided by MGI
Official Full Name	zinc finger, BED type containing 6 provided by MGI
Primary source	MGI:MGI:3828086
See related	Ensembl:ENSMUSG00000094410 AllianceGenome:MGI:3828086
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	MGR; Gm8466; Gm38394
Summary	Enables transcription cis-regulatory region binding activity. Involved in several processes, including negative regulation of transcription by RNA polymerase II; regulation of insulin secretion involved in cellular response to glucose stimulus; and type B pancreatic cell differentiation. Acts upstream of or within blastocyst hatching. Located in cytoplasm and nucleolus. Is expressed in early conceptus; nervous system; neural retina; and secondary oocyte. Orthologous to human ZBED6 (zinc finger BED-type containing 6). [provided by Alliance of Genome Resources, Apr 2022]
Orthologs	human all



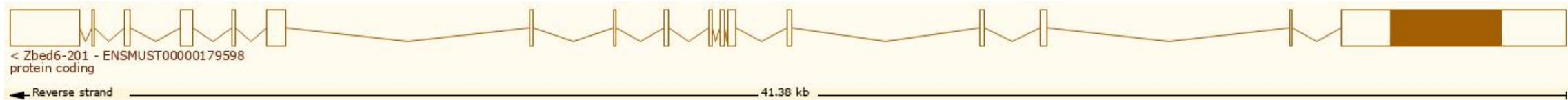
Source: <https://www.ncbi.nlm.nih.gov/>

Transcript Information

The gene has 1 transcript, all transcripts are shown below:

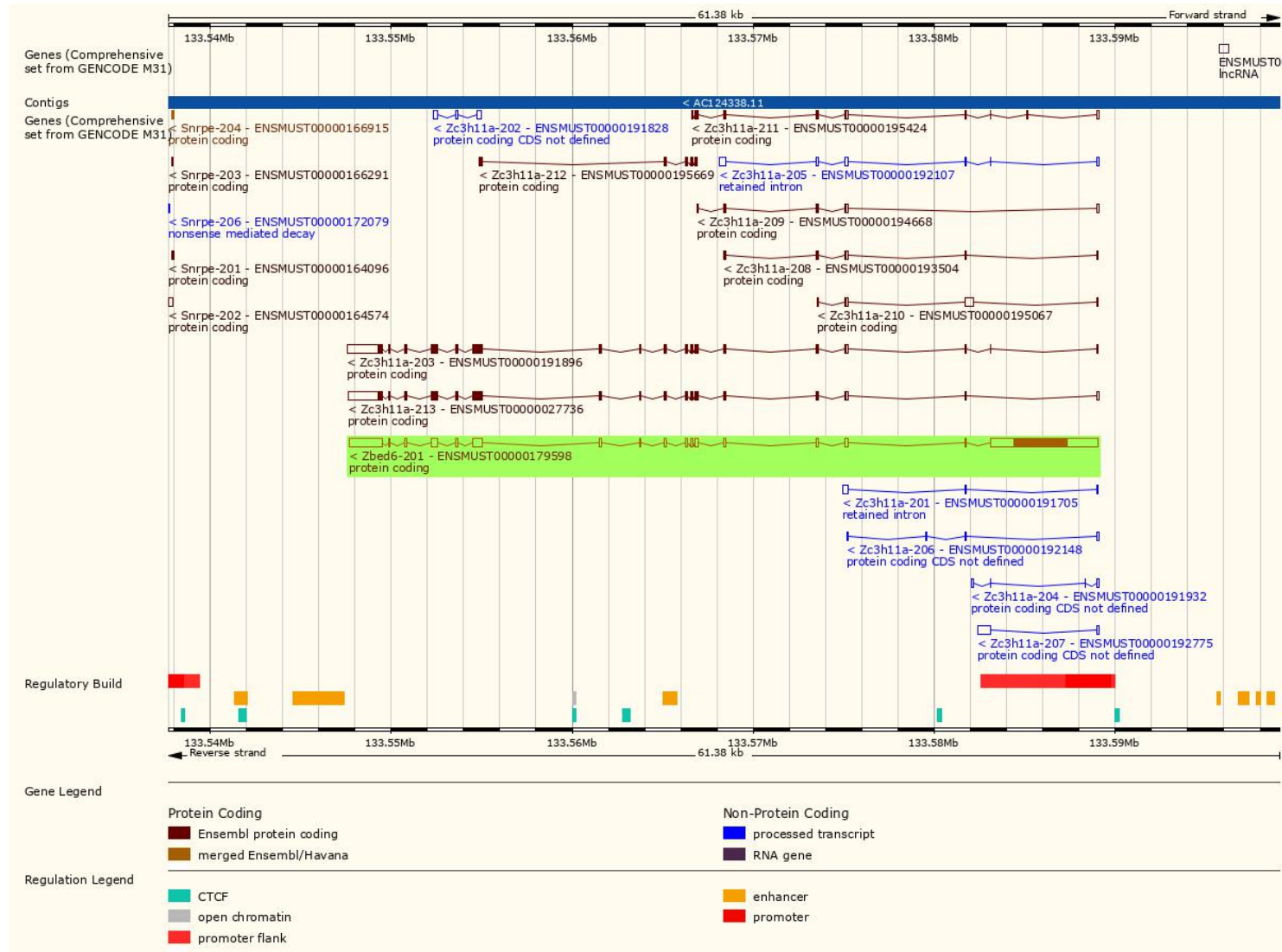
Transcript ID	Name	bp	Protein	Biotype	CCDS	UniProt Match	Flags			
ENSMUST00000179598.4	Zbed6-201	10156	980aa	Protein coding	CCDS56643	D2EAC2-1	Ensembl Canonical	GENCODE basic	APPRIS P1	TSL:1

The strategy is based on the design of *Zbed6-201* transcript, the transcription is shown below:

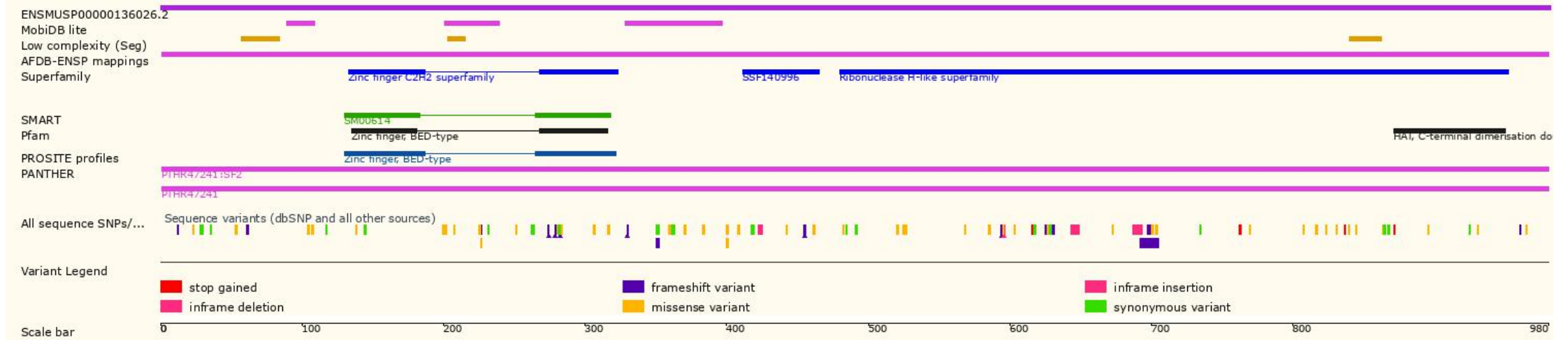


Source: <https://www.ensembl.org>

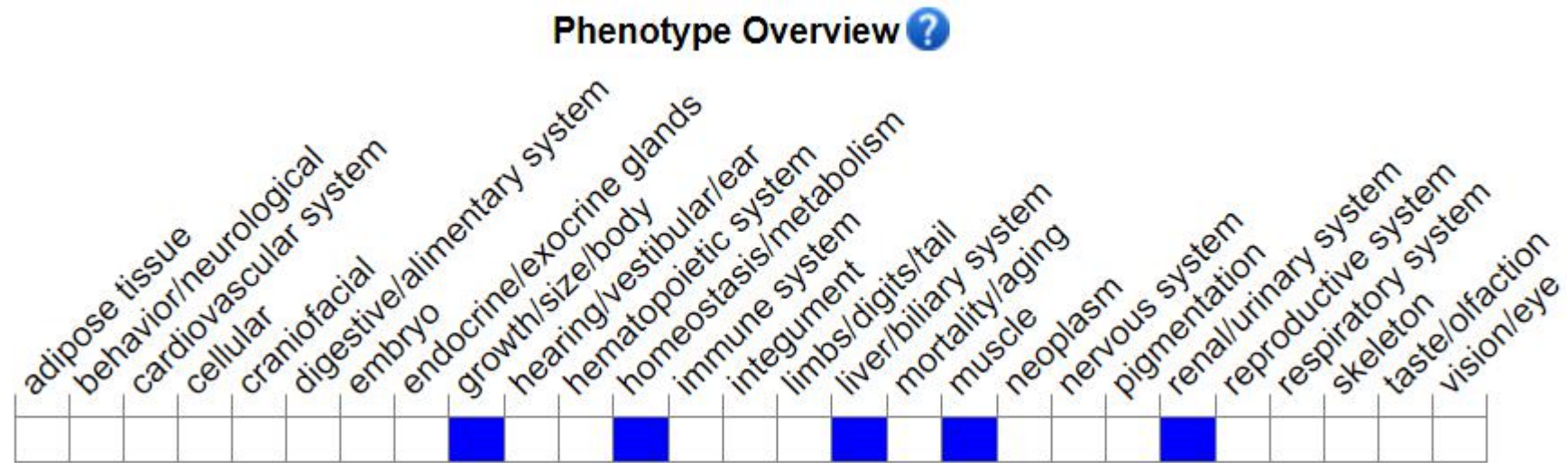
Genomic Information



Protein Information



Mouse Phenotype Information (MGI)



- Phenotypes affected by the mutations of *Zbed6* gene are marked in blue. Mice homozygous for a null allele display sex specific increases in body, skeletal muscle, and organ sizes.

Important Information

- The effect of *Zc3h11a* gene overlapping with targeting region is unknown.
- *Zbed6* is located on Chr1. 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.