

# Zfp462 Cas9-CKO Strategy

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# Overview

## Target Gene Name

- Zfp462

## Project Type

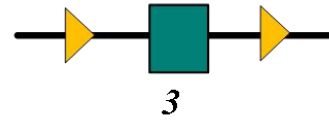
- Cas9-CKO

## Genetic Background

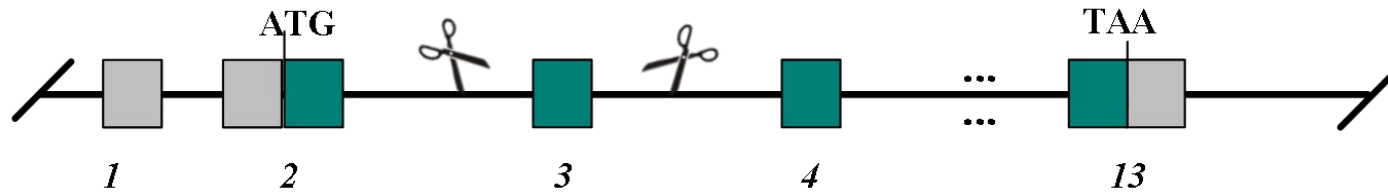
- C57BL/6JGpt

# Strain Strategy

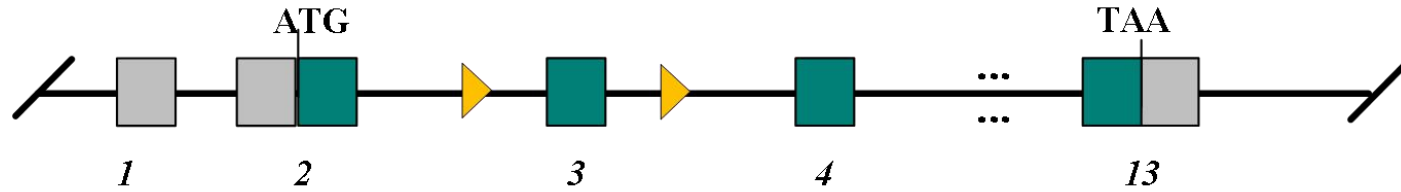
Donor and CRISPR-Cas9 System



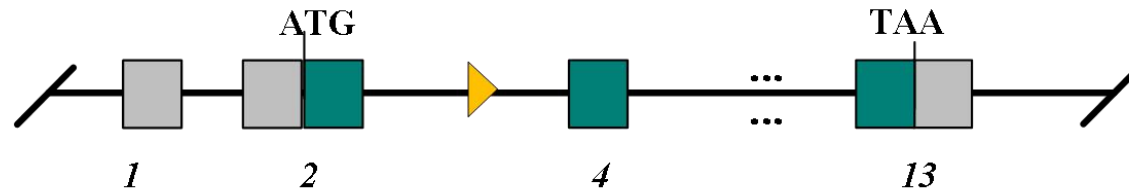
Wild-type allele



Conditional KO allele



KO allele



Schematic representation of CRISPR-Cas9 engineering used to edit the *Zfp462* gene.

# Technical Information

- The *Zfp462* gene has 4 transcripts. According to the structure of *Zfp462* gene, exon 3 of *Zfp462*-203 (ENSMUST00000098070.10) transcript is recommended as the knockout region. The region contains 5594 bp coding sequence. Knocking out the region will result in disruption of protein function.
- In this project we use CRISPR-Cas9 technology to modify *Zfp462* gene. The brief process is as follows: CRISPR-Cas9 system and Donor 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.
- The flox mice will be knocked out after mating with mice expressing Cre recombinase, resulting in the loss of function of the target gene in specific tissues and cell types.

# Gene Information

**Zfp462 zinc finger protein 462 [ *Mus musculus* (house mouse) ]**

[Download Datasets](#)

Gene ID: 242466, updated on 12-May-2024

## Summary

<b>Official Symbol</b>	Zfp462 provided by <a href="#">MGI</a>
<b>Official Full Name</b>	zinc finger protein 462 provided by <a href="#">MGI</a>
<b>Primary source</b>	<a href="#">MGI:MGI:107690</a>
<b>See related</b>	<a href="#">Ensembl:ENSMUSG00000060206</a> <a href="#">AllianceGenome:MGI:107690</a>
<b>Gene type</b>	protein coding
<b>RefSeq status</b>	VALIDATED
<b>Organism</b>	<a href="#">Mus musculus</a>
<b>Lineage</b>	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
<b>Also known as</b>	Gt4-2; Zfpip; Znf462; 6030417H05; 9430078C22Rik
<b>Summary</b>	Predicted to enable DNA binding activity and metal ion binding activity. Acts upstream of or within chromatin organization; negative regulation of DNA binding activity; and positive regulation of transcription by RNA polymerase II. Located in nucleus. Is expressed in several structures, including central nervous system; ear; genitourinary system; jaw; and limb primordium. Used to study generalized anxiety disorder. Orthologous to human ZNF462 (zinc finger protein 462). [provided by Alliance of Genome Resources, Apr 2022]
<b>Expression</b>	Broad expression in CNS E11.5 (RPKM 12.4), whole brain E14.5 (RPKM 11.3) and 17 other tissues <a href="#">See more</a>
<b>Orthologs</b>	<a href="#">human</a> <a href="#">all</a>
<b>NEW</b>	Try the new <a href="#">Gene table</a> Try the new <a href="#">Transcript table</a>

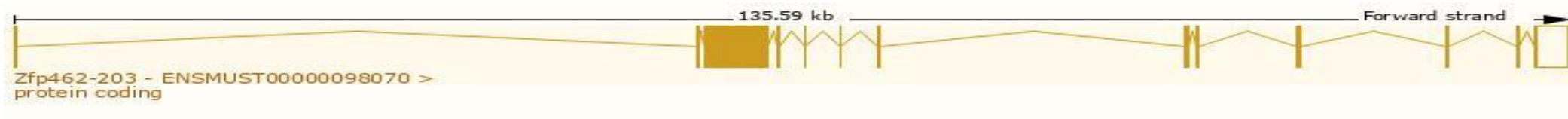
Source: <https://www.ncbi.nlm.nih.gov/>

# Transcript Information

The gene has 4 transcripts, all transcripts are shown below:

Transcript ID	Name	bp	Protein	Biotype	CCDS	UniProt Match	Flags
<a href="#">ENSMUST00000098070.10</a>	Zfp462-203	10465	<a href="#">2495aa</a>	Protein coding	<a href="#">CCDS38764</a>	<a href="#">B1AWL2</a>	Ensembl Canonical GENCODE basic APPRIS P1 TSL:5
<a href="#">ENSMUST00000079605.5</a>	Zfp462-202	4684	<a href="#">1408aa</a>	Protein coding		<a href="#">B1AWL5</a>	GENCODE basic TSL:5
<a href="#">ENSMUST00000030131.12</a>	Zfp462-201	4823	<a href="#">1407aa</a>	Protein coding		<a href="#">B1AWL4</a>	GENCODE basic TSL:5
<a href="#">ENSMUST00000133895.8</a>	Zfp462-204	363	<a href="#">93aa</a>	Protein coding		<a href="#">B1AWL3</a>	TSL:5 CDS 3' incomplete

The strategy is based on the design of *Zfp462-203* transcript, the transcription is shown below:

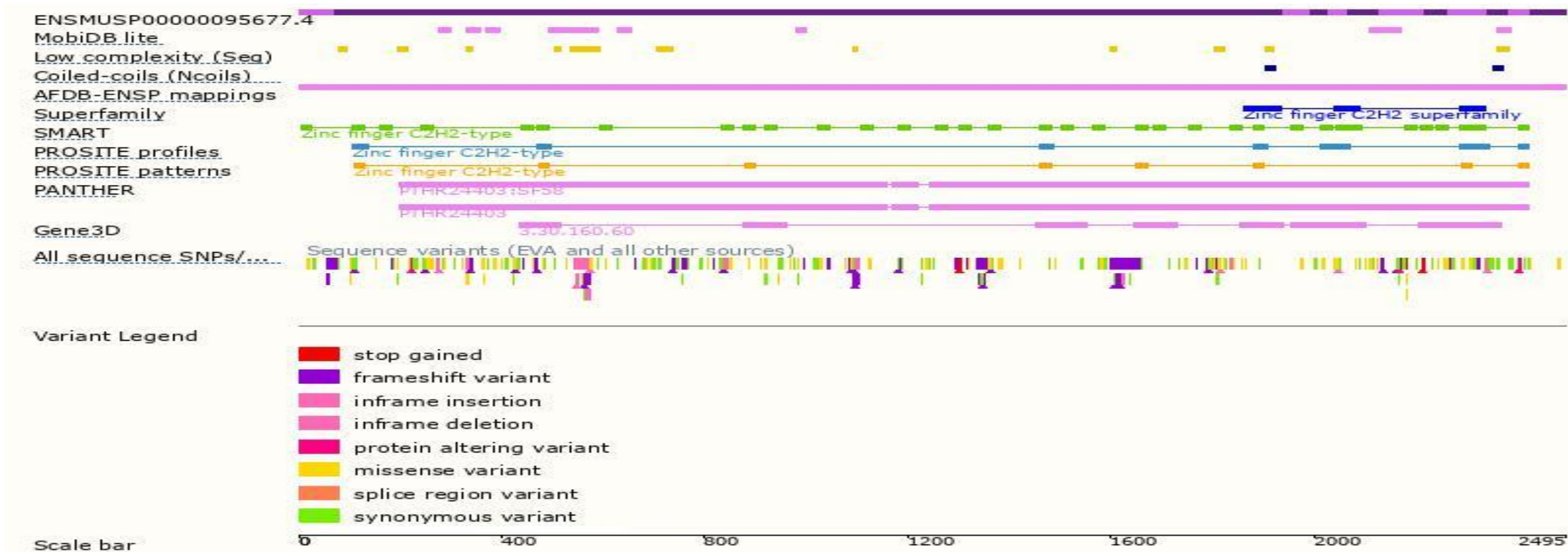


Source: <https://www.ensembl.org>

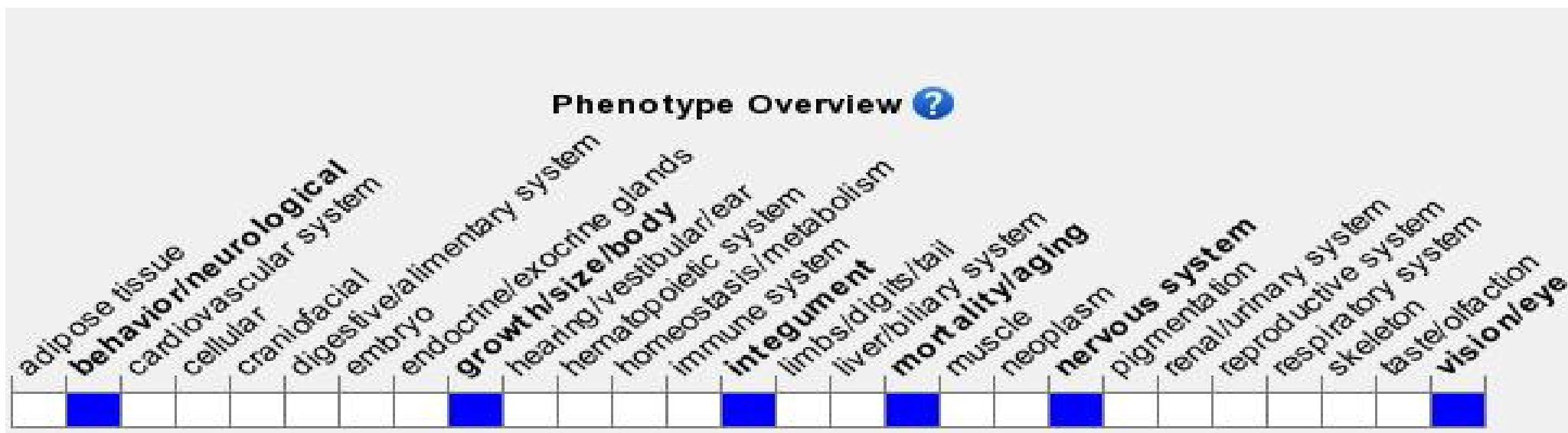
# Genomic Information



# Protein Information



# Mouse Phenotype Information (MGI)



- Mice homozygous for knock-out allele exhibit complete prenatal lethality with decreased birth body size and eyelids open at birth. Heterozygotes show postnatal growth retardation, low body weight and brain weight, and anxiety-like behaviors with excessive self-grooming and hair loss.

# Important Information

- The length of intron 2-3 of *Zfp462* is less than 600 bp, the loxp insertion may affect the transcription of this gene.
- After cre, there are 73 amino acids remaining in the N terminal of this strategy, and the effect is unknown.
- According to the existing MGI data, mice homozygous for knock-out allele exhibit complete prenatal lethality with decreased birth body size and eyelids open at birth. Heterozygotes show postnatal growth retardation, low body weight and brain weight, and anxiety-like behaviors with excessive self-grooming and hair loss.
- The effect of this strategy on *Zfp462-201*, *Zfp462-202* and *Zfp462-204* is unknown.
- *Zfp462* is located on Chr4. 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 risk of loxp insertion on gene transcription, RNA splicing and protein translation cannot be predicted at the existing technology level.