

# Glis1 Cas9-KO Strategy

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# Overview

## Target Gene Name

- Glis1

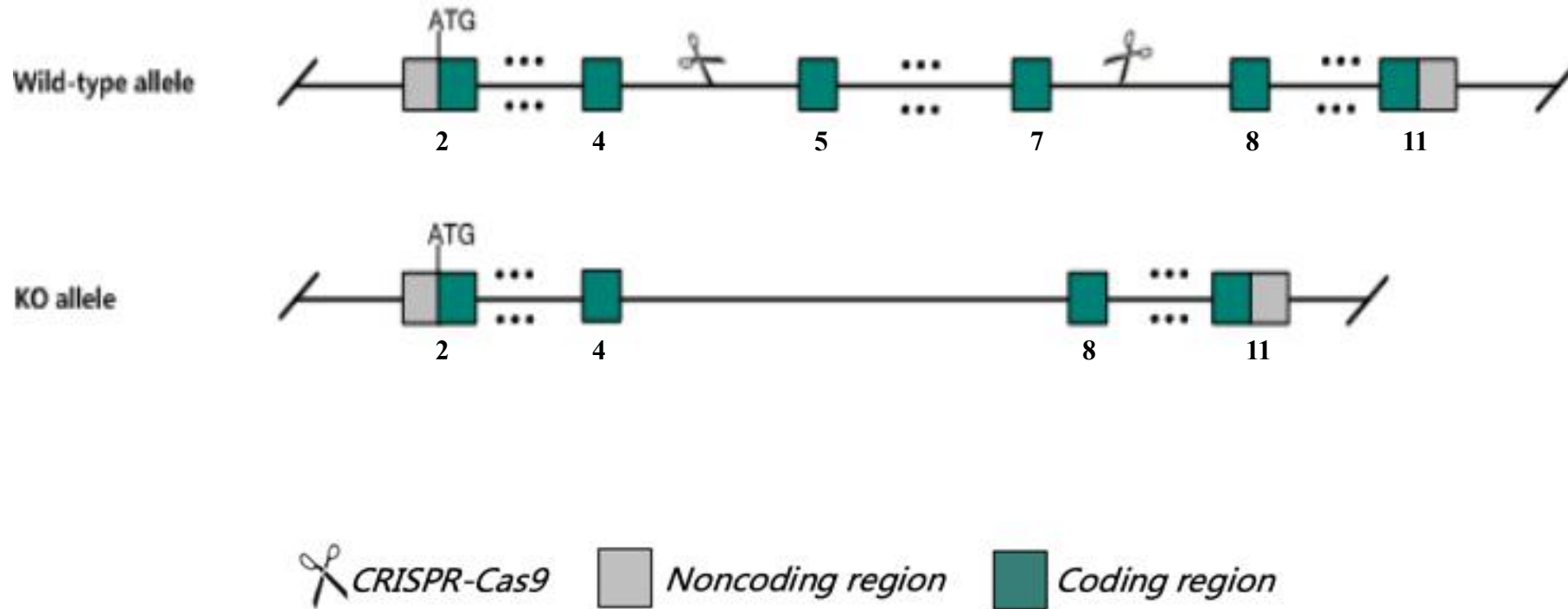
## Project Type

- Cas9-KO

## Genetic Background

- C57BL/6JGpt

# Strain Strategy



# Technical Information

- The *Glis1* gene has 6 transcripts. According to the structure of *Glis1* gene, exon5-exon7 of *Glis1*-201 (ENSMUST00000046005.9) transcript is recommended as the knockout region. The region contains 406bp coding sequence. Knocking out the region will result in disruption of protein function.
- In this project we use CRISPR-Cas9 technology to modify *Glis1* 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

## Glis1 GLIS family zinc finger 1 [ *Mus musculus* (house mouse) ]

Gene ID: 230587, updated on 3-May-2025

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### Summary

<b>Official Symbol</b>	Glis1 provided by <a href="#">MGI</a>
<b>Official Full Name</b>	GLIS family zinc finger 1 provided by <a href="#">MGI</a>
<b>Primary source</b>	<a href="#">MGI:MGI:2386723</a>
<b>See related</b>	<a href="#">Ensembl:ENSMUSG000000034762</a> <a href="#">AllianceGenome:MGI:2386723</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>	Gli5; Gli6; GliH1
<b>Summary</b>	Enables DNA-binding transcription activator activity, RNA polymerase II-specific; DNA-binding transcription repressor activity, RNA polymerase II-specific; and RNA polymerase II transcription regulatory region sequence-specific DNA binding activity. Involved in several processes, including fat cell differentiation; osteoblast differentiation; and regulation of transcription by RNA polymerase II. Acts upstream of or within positive regulation of DNA-templated transcription and regulation of transcription by RNA polymerase II. Located in nucleus. Is expressed in several structures, including embryo mesenchyme; genitourinary system; heart and pericardium; sensory organ; and skin. Orthologous to human GLIS1 (GLIS family zinc finger 1). [provided by Alliance of Genome Resources, May 2025]
<b>Expression</b>	Biased expression in kidney adult (RPKM 4.5), limb E14.5 (RPKM 2.5) and 12 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 6 transcripts, all transcripts are shown below:

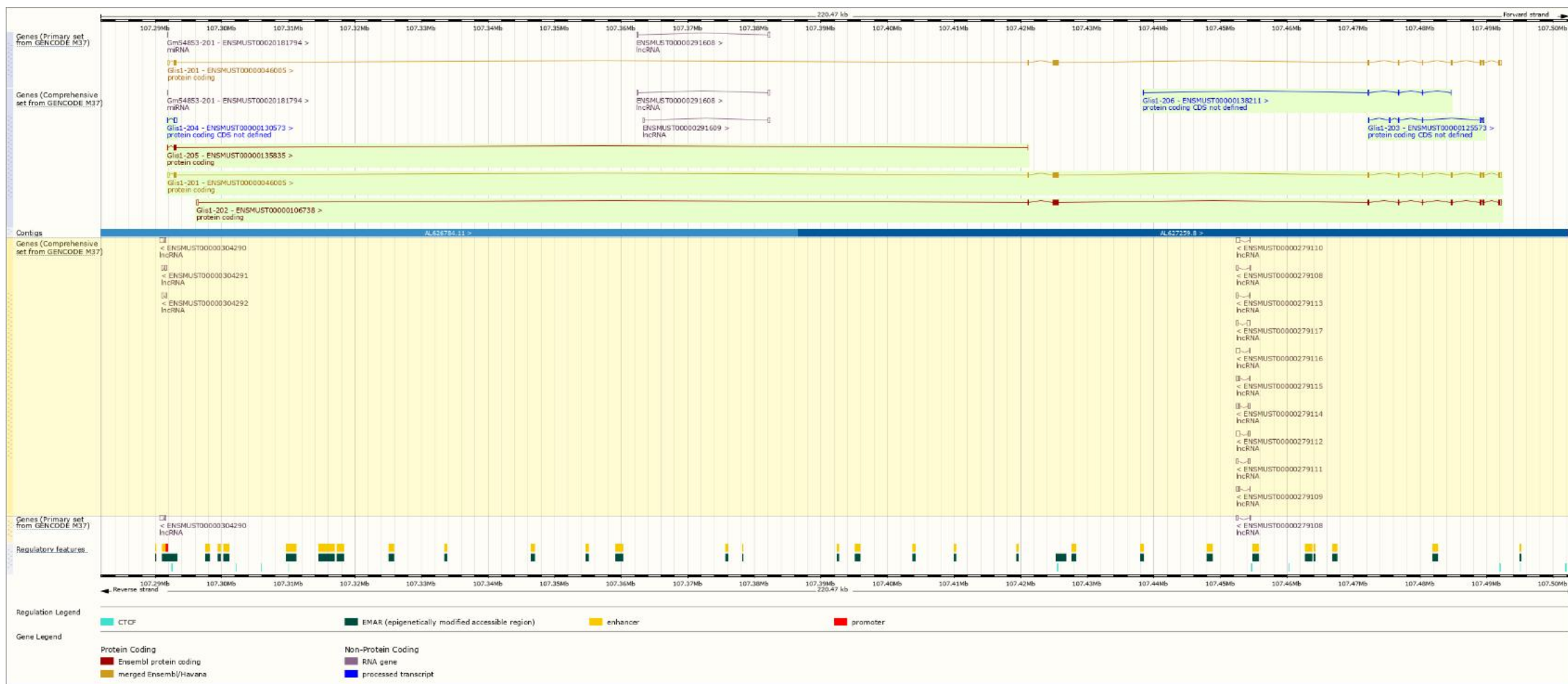
Transcript ID	Name	bp	Protein	Biotype	CCDS	UniProt Match	Flags
<a href="#">ENSMUST00000046005.9</a>	Glis1-201	2906	<a href="#">789aa</a>	Protein coding	<a href="#">CCDS38831</a>	<a href="#">Q8K1M4-1</a>	Ensembl Canonical GENCODE Primary GENCODE Basic APPRIS P2 TSL:1
<a href="#">ENSMUST00000106738.2</a>	Glis1-202	2744	<a href="#">601aa</a>	Protein coding		<a href="#">B1ASP5</a>	GENCODE Basic APPRIS ALT2 TSL:5
<a href="#">ENSMUST00000135835.8</a>	Glis1-205	432	<a href="#">104aa</a>	Protein coding		<a href="#">A2A8S0</a>	TSL:3 CDS 3' incomplete
<a href="#">ENSMUST00000125573.2</a>	Glis1-203	852	No protein	Protein coding CDS not defined		-	TSL:3
<a href="#">ENSMUST00000130573.2</a>	Glis1-204	501	No protein	Protein coding CDS not defined		-	TSL:1
<a href="#">ENSMUST00000138211.8</a>	Glis1-206	470	No protein	Protein coding CDS not defined		-	TSL:5

The strategy is based on the design of *Glis1-201* transcript, the transcription is shown below:



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

# Genomic Information



# Protein Information



# Mouse Phenotype Information (MGI)

- Homozygous mice do not exhibit any overt abnormalities, including behavior, kidney or tooth morphology, up to 6 months of age.

# Important Information

- According to MGI information, Homozygous mice do not exhibit any overt abnormalities, including behavior, kidney or tooth morphology, up to 6 months of age.
- The majority of amino acid residues remain at the N-terminus of this strategy, and the effect is unknown.
- The *Glis1-205* transcript is not affected and the effect is unknown.
- *Glis1* 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 risks of the mutation on gene transcription, RNA splicing and protein translation cannot be predicted at the existing technology level.