

# *Lhx9* Cas9-KO Strategy

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# Project Overview

**Project Name**

***Lhx9***

**Project type**

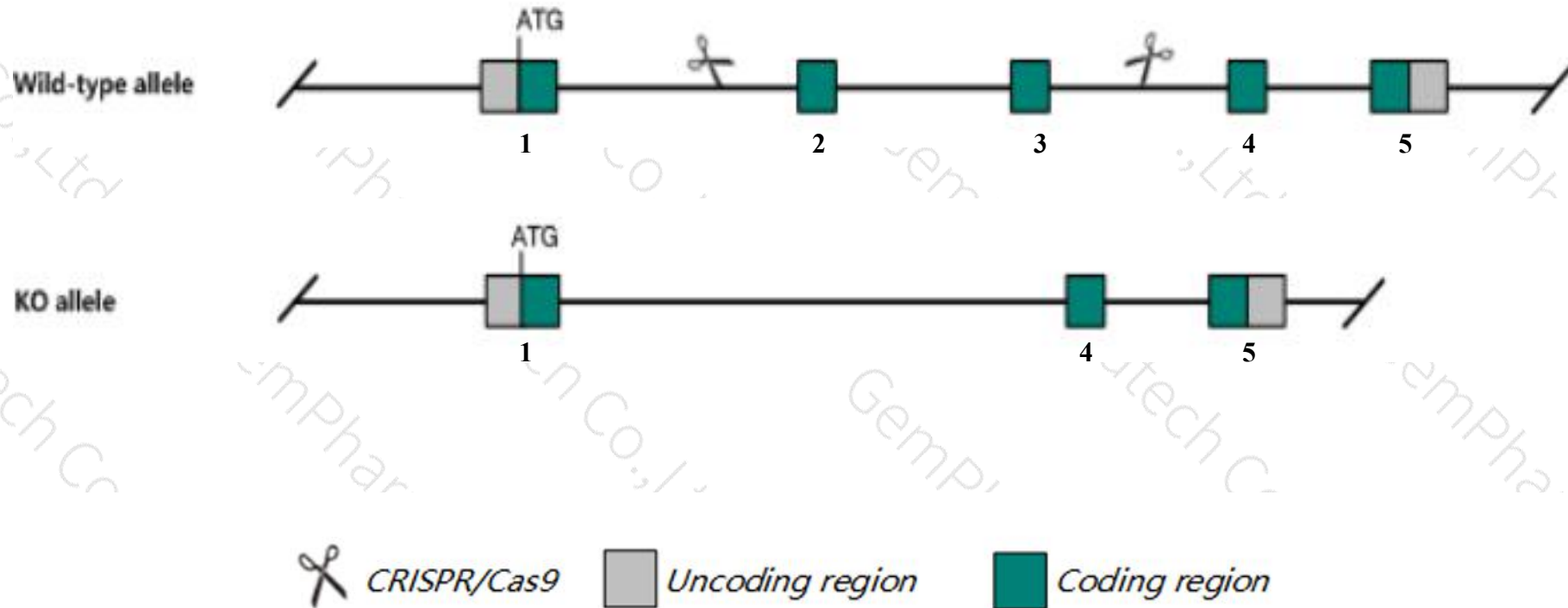
**Cas9-KO**

**Strain background**

**C57BL/6JGpt**

# Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Lhx9* gene. The schematic diagram is as follows:



- The *Lhx9* gene has 7 transcripts. According to the structure of *Lhx9* gene, exon2-exon3 of *Lhx9*-204(ENSMUST00000112026.3) transcript is recommended as the knockout region. The region contains 559bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Lhx9* gene. The brief process is as follows: CRISPR/Cas9 system 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 sequencing. A stable F1 generation mouse model was obtained by mating positive F0 generation mice with C57BL/6JGpt mice.

- According to the existing MGI data, homozygotes for a targeted null mutation exhibit failed proliferation of the somatic cells of the genital ridge resulting in lack of discrete gonad formation, infertility in both sexes, and female-like genitalia in genetically male mice.
- Transcript *Lhx9*-206 may not be affected.
- The *Lhx9* gene is located on the Chr1. 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)

Lhx9 LIM homeobox protein 9 [Mus musculus (house mouse)]

Gene ID: 16876, updated on 13-Mar-2020

## Summary



Official Symbol Lhx9 provided by [MGI](#)

Official Full Name LIM homeobox protein 9 provided by [MGI](#)

Primary source [MGI:MGI:1316721](#)

See related [Ensembl:ENSMUSG00000019230](#)

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 3110009007Rik, BB104635, LH2B

Expression Biased expression in whole brain E14.5 (RPKM 7.8), CNS E14 (RPKM 6.5) and 4 other tissues [See more](#)

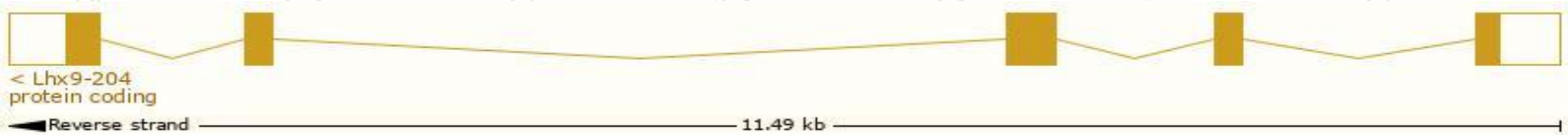
Orthologs [human all](#)

# Transcript information (Ensembl)

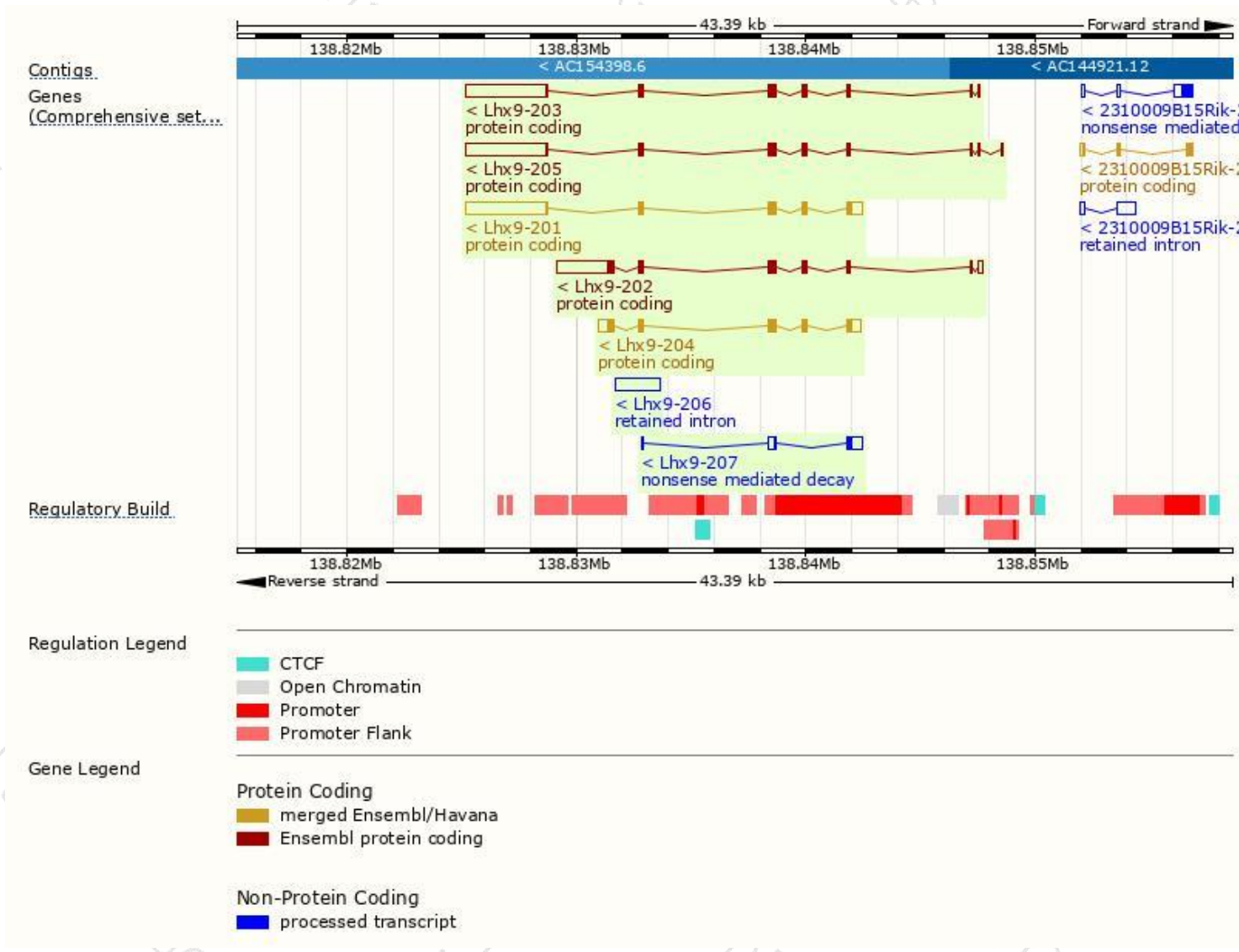
The gene has 7 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Lhx9-201	<a href="#">ENSMUST00000019374.13</a>	4937	<a href="#">330aa</a>	Protein coding	<a href="#">CCDS15334</a>	<a href="#">Q9WUH2</a>	TSL:1 GENCODE basic APPRIS P3
Lhx9-205	<a href="#">ENSMUST00000112030.8</a>	4633	<a href="#">321aa</a>	Protein coding	<a href="#">CCDS15333</a>	<a href="#">Q9WUH2</a>	TSL:5 GENCODE basic
Lhx9-203	<a href="#">ENSMUST00000093486.9</a>	4551	<a href="#">321aa</a>	Protein coding	<a href="#">CCDS15333</a>	<a href="#">Q9WUH2</a>	TSL:1 GENCODE basic
Lhx9-204	<a href="#">ENSMUST00000112026.3</a>	2065	<a href="#">397aa</a>	Protein coding	<a href="#">CCDS35726</a>	<a href="#">Q9WUH2</a>	TSL:1 GENCODE basic APPRIS ALT1
Lhx9-202	<a href="#">ENSMUST00000046870.12</a>	3645	<a href="#">388aa</a>	Protein coding	-	<a href="#">Q9WUH2</a>	TSL:5 GENCODE basic APPRIS ALT1
Lhx9-207	<a href="#">ENSMUST00000194557.1</a>	1058	<a href="#">75aa</a>	Nonsense mediated decay	-	<a href="#">A0A0A6YY42</a>	TSL:5
Lhx9-206	<a href="#">ENSMUST00000192425.1</a>	1946	No protein	Retained intron	-	-	TSL:NA

The strategy is based on the design of *Lhx9-204* transcript,the transcription is shown below:



# Genomic location distribution

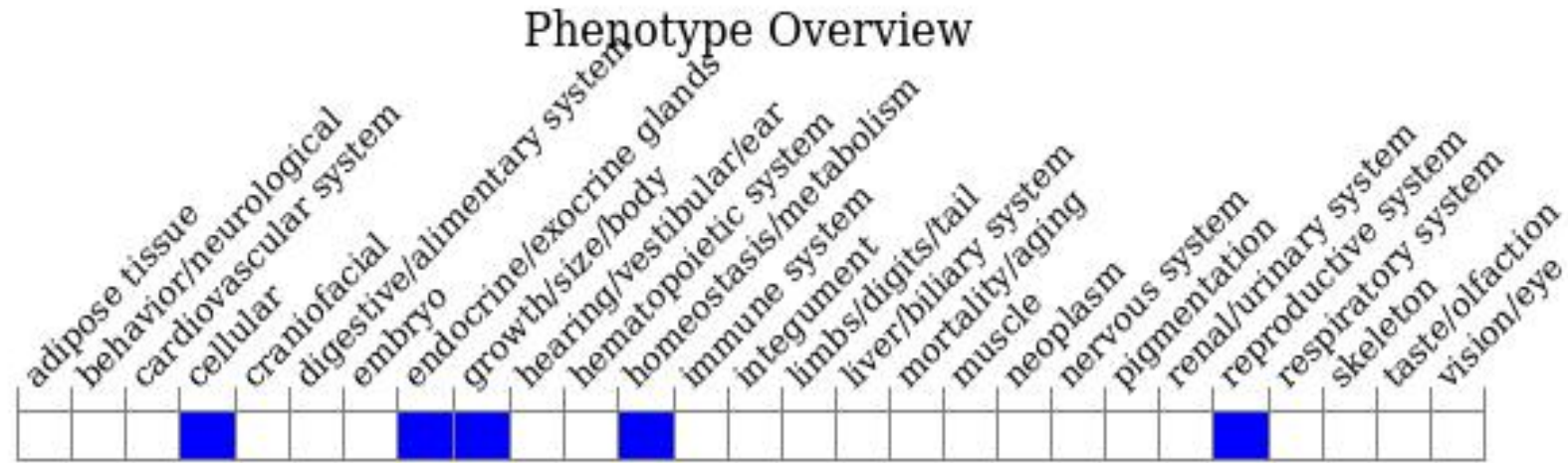




# Protein domain



# 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, homozygotes for a targeted null mutation exhibit failed proliferation of the somatic cells of the genital ridge resulting in lack of discrete gonad formation, infertility in both sexes, and female-like genitalia in genetically male mice.

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

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