

Ywhaz Cas9-KO Strategy

Designer:

JiaYu

Reviewer:

Xiaojing Li

Design Date:

2020-3-9

Project Overview

Project Name

Ywhaz

Project type

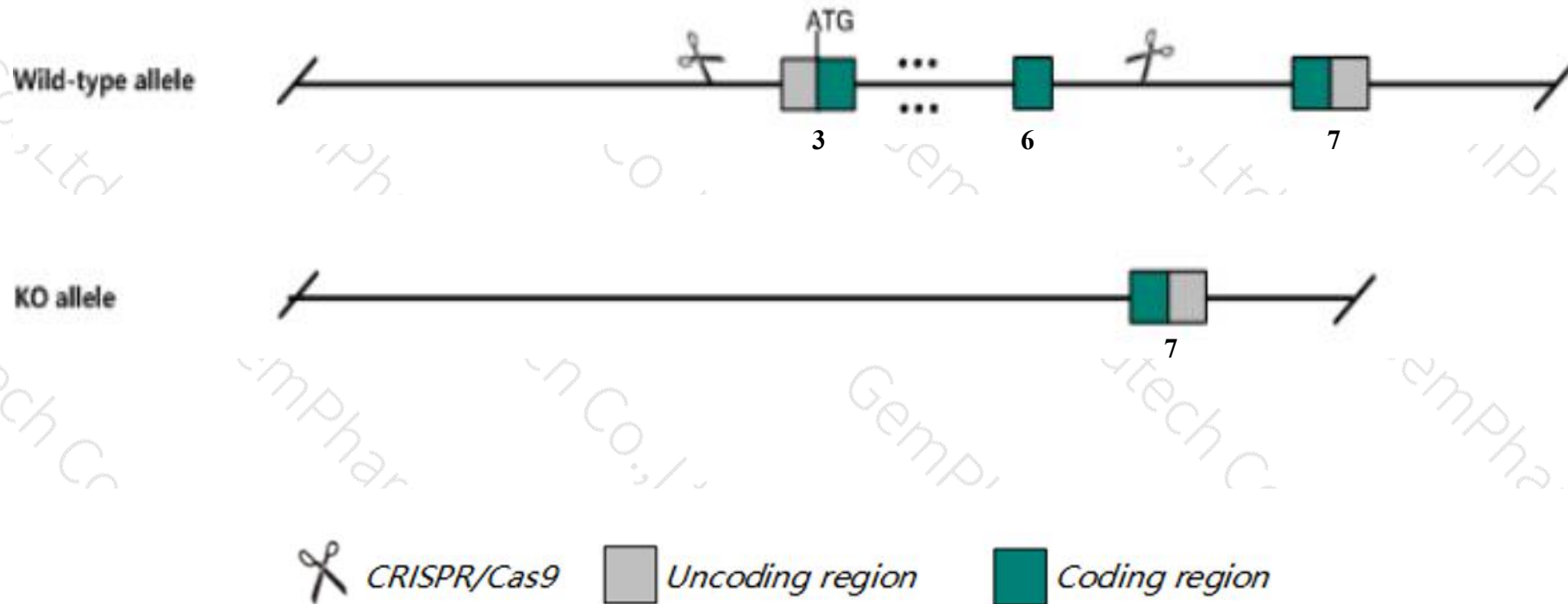
Cas9-KO

Strain background

C57BL/6JGpt

Knockout strategy

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



- The *Ywhaz* gene has 9 transcripts. According to the structure of *Ywhaz* gene, exon3-exon6 of *Ywhaz-201* (ENSMUST00000022894.13) transcript is recommended as the knockout region. The region contains start codon ATG. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Ywhaz* gene. The brief process is as follows: CRISPR/Cas9 system

- According to the existing MGI data, Mice homozygous for a knock-out allele exhibit growth retardation after P14, some postnatal lethality by P21. Mice homozygous for one gene trap allele also exhibit neurodevelopmental and neuropsychiatric behaviour defects.
- The *Ywhaz* gene is located on the Chr15. 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)

Ywhaz tyrosine 3-monooxygenase/tryptophan 5-monooxygenase activation protein, zeta polypeptide [Mus musculus (house mouse)]

Gene ID: 22631, updated on 7-Apr-2019

Summary



Official Symbol Ywhaz provided by [MGI](#)

Official Full Name tyrosine 3-monooxygenase/tryptophan 5-monooxygenase activation protein, zeta polypeptide provided by [MGI](#)

Primary source [MGI:MGI:109484](#)

See related [Ensembl:ENSMUSG00000022285](#)

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 111001311Rik, 14-3-3zeta, AI596267, AL022924, AU020854

Expression Ubiquitous expression in frontal lobe adult (RPKM 171.9), cortex adult (RPKM 135.4) and 28 other tissues [See more](#)

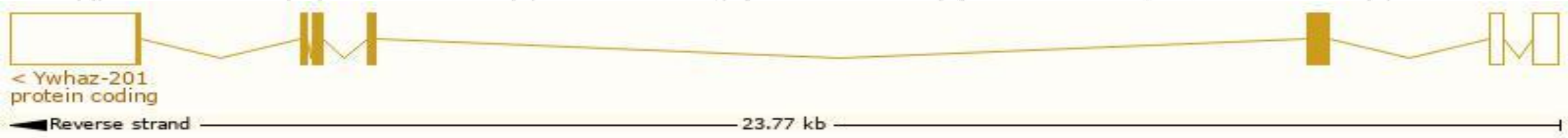
Orthologs [human](#) [all](#)

Transcript information (Ensembl)

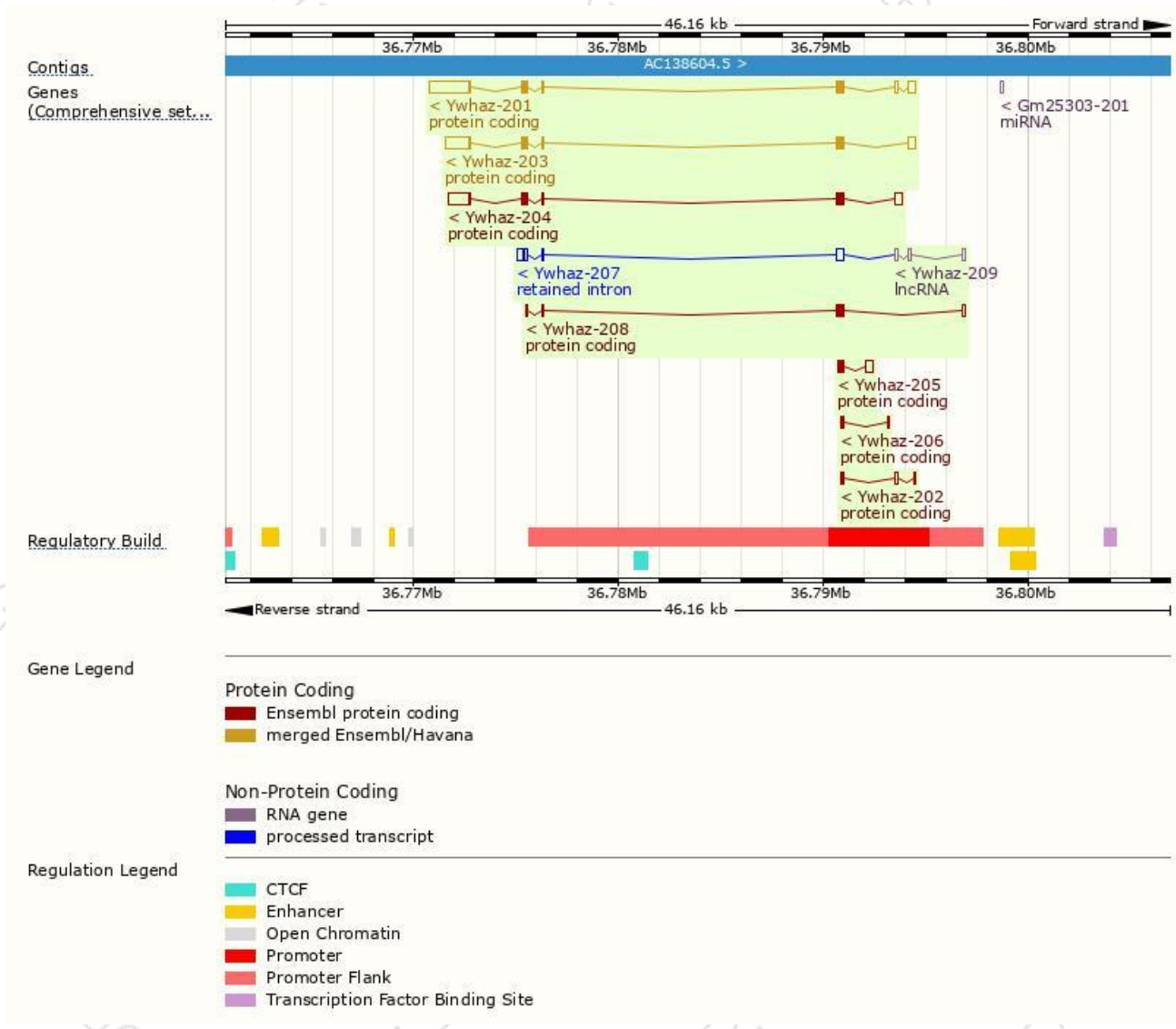
The gene has 9 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Ywhaz-201	ENSMUST00000022894.13	3288	245aa	Protein coding	CCDS27432	P63101	TSL:1 GENCODE basic APPRIS P1
Ywhaz-203	ENSMUST00000110361.7	2285	245aa	Protein coding	CCDS27432	P63101	TSL:1 GENCODE basic APPRIS P1
Ywhaz-204	ENSMUST00000110362.3	2122	245aa	Protein coding	CCDS27432	P63101	TSL:1 GENCODE basic APPRIS P1
Ywhaz-208	ENSMUST00000226851.1	628	166aa	Protein coding	-	A0A2I3BQ03	CDS 3' incomplete
Ywhaz-205	ENSMUST00000126184.1	580	88aa	Protein coding	-	D3YXN6	CDS 3' incomplete TSL:2
Ywhaz-202	ENSMUST00000110359.1	374	26aa	Protein coding	-	D3YW45	CDS 3' incomplete TSL:2
Ywhaz-206	ENSMUST00000151635.1	188	44aa	Protein coding	-	D3YXF4	CDS 3' incomplete TSL:5
Ywhaz-207	ENSMUST00000154879.1	924	No protein	Retained intron	-	-	TSL:2
Ywhaz-209	ENSMUST00000227067.1	388	No protein	lncRNA	-	-	

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



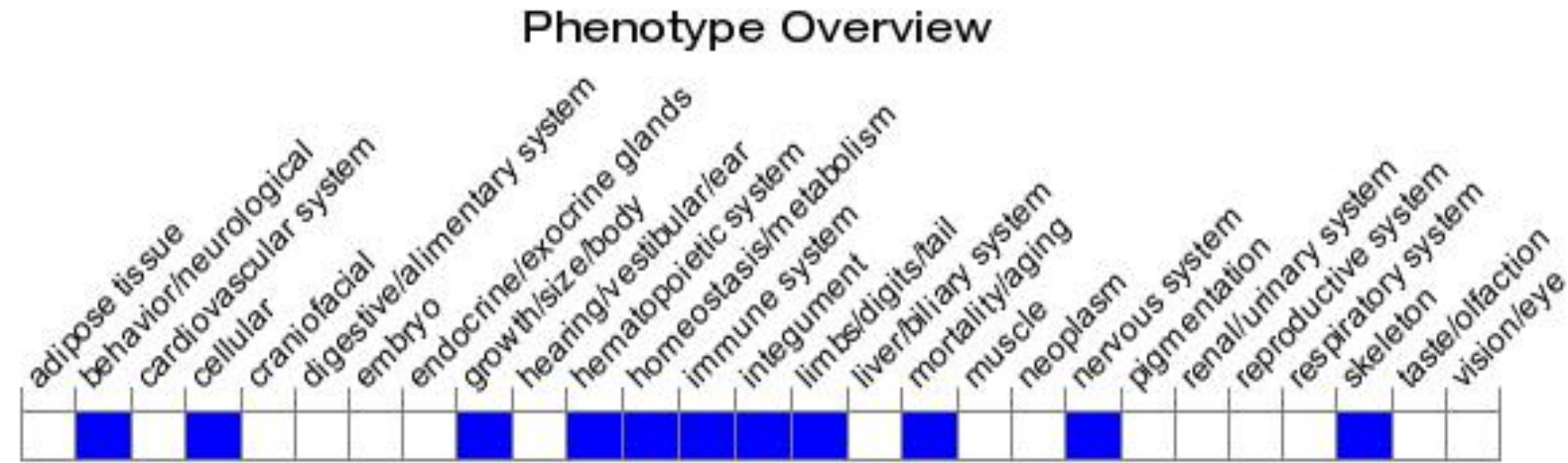
Genomic location distribution



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, Mice homozygous for a knock-out allele exhibit growth retardation after P14, some postnatal lethality by P21. Mice homozygous for one gene trap allele also exhibit neurodevelopmental and neuropsychiatric behaviour defects.

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

Tel: 400-9660890

