Wasf1 Cas9-KO Strategy

Designer: Yang Zeng
Reviewer: Yanhua Shen
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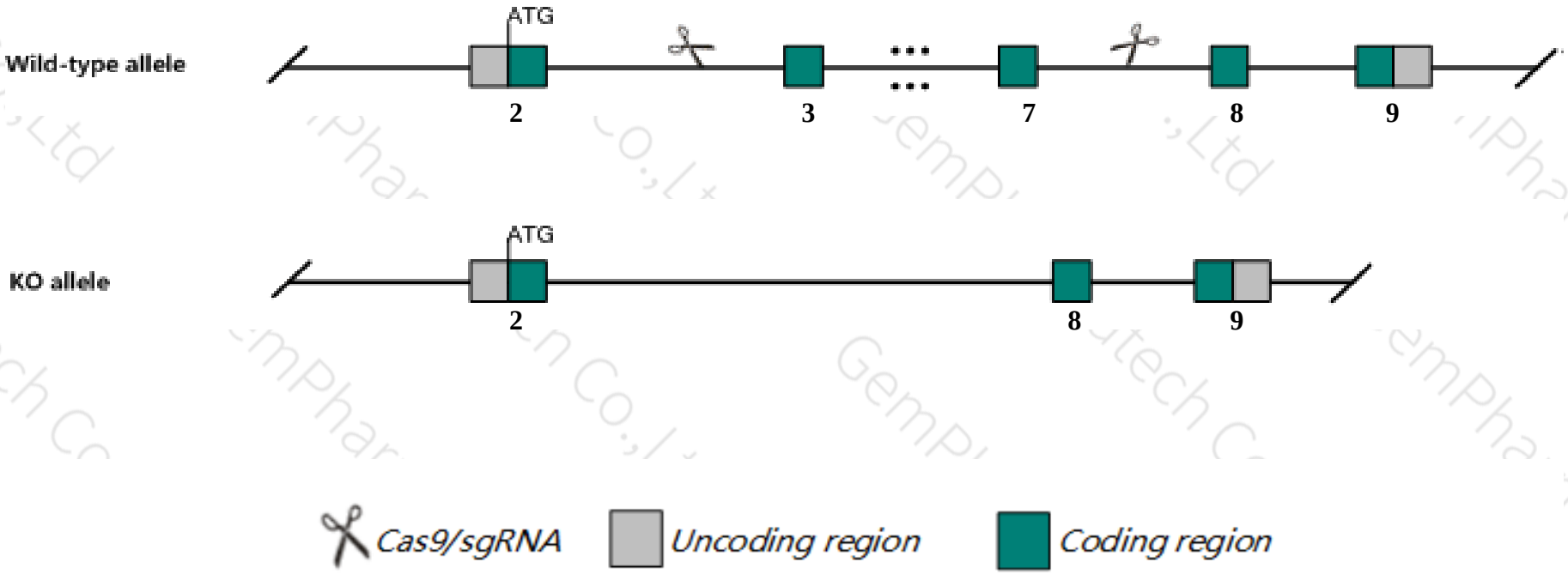
Project Overview

Project Name	***Wasf1***
Project type	**Cas9-KO**
Strain background	**C57BL/6JGpt**

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Wasf1* gene. The schematic diagram is as follows:



Technical routes

➢ The *Wasf1* gene has 2 transcripts. According to the structure of *Wasf1* gene, exon3-exon7 of *Wasf1-202* (ENSMUST00000105509.1) transcript is recommended as the knockout region.The region contains 760bp coding sequence. Knock out the region will result in disruption of protein function.

➢ In this project we use CRISPR/Cas9 technology to modify *Wasf1* gene. The brief process is as follows: sgRNA was transcribed in vitro.Cas9 and sgRNA 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.

Notice

➢ According to the existing MGI data,Mutation of this gene has been associated with both morphological and functional defects of the central nervous system. Targeted mutagenesis has resulted in mice that display sensorimotor and cognitive defects similar to those exhibited by patients with 3p-syndrome mental retardation.

➢ The *Wasf1* gene is located on the Chr10. 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）

Wasf1 WAS protein family, member 1 [*Mus musculus* (house mouse)]

Gene ID: 83767, updated on 22-Oct-2019

Summary

Official Symbol	Wasf1 provided by MGI
Official Full Name	WAS protein family, member 1 provided by MGI
Primary source	MGI:MGI:1890563
See related	Ensembl:ENSMUSG00000019831
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	Scar; WAVE; WAVE-1; AI195380; AI838537
Expression	Biased expression in frontal lobe adult (RPKM 33.5), cortex adult (RPKM 31.9) and 9 other tissues See more
Orthologs	human all

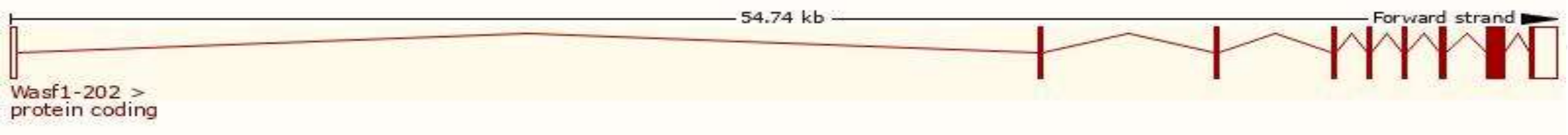
Chromosome 10 - NC_000076.6

Transcript information（Ensembl）

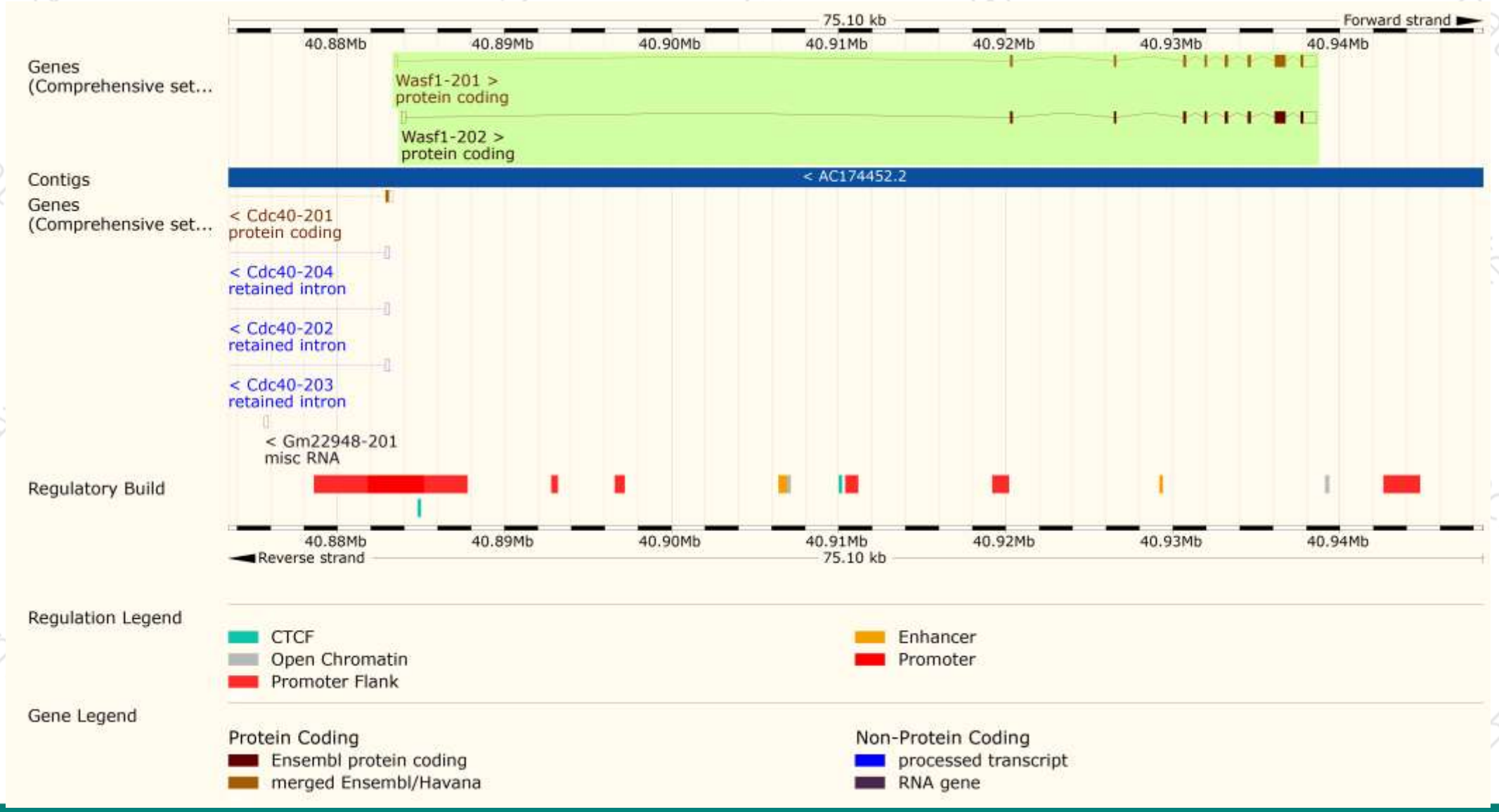
The gene has 2 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Translation ID	Biotype	CCDS	UniProt	Flags
Wasf1-202	ENSMUST00000105509.1	2719	559aa	ENSMUSP00000101148.1	Protein coding	CCDS23801	Q8R5H6	TSL:5 GENCODE basic APPRIS P1
Wasf1-201	ENSMUST00000019975.13	2609	559aa	ENSMUSP00000019975.7	Protein coding	CCDS23801	Q8R5H6	TSL:1 GENCODE basic APPRIS P1

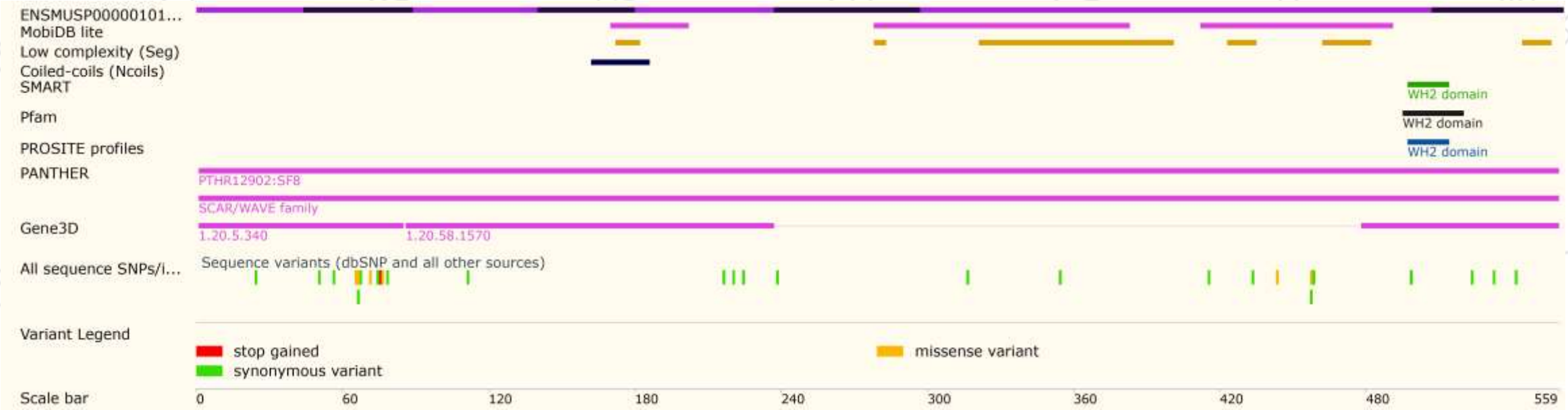
The strategy is based on the design of *Wasf1-202* transcript,The transcription is shown below



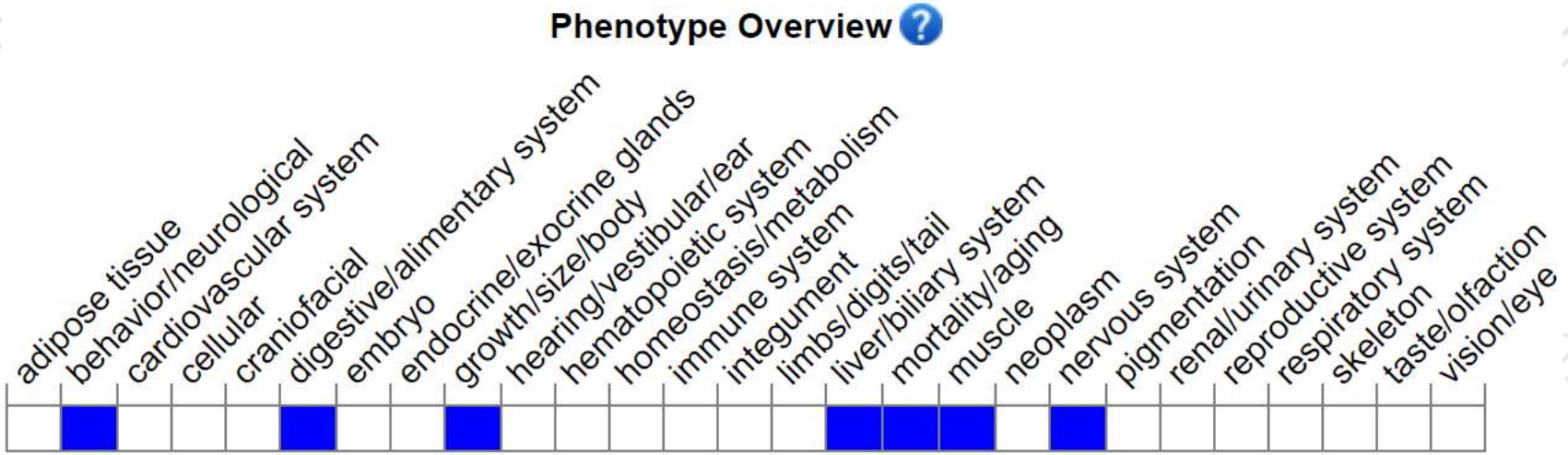
Genomic location distribution



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/).

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

Tel: 025-5864 1534

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GemPharmatech Co.,Ltd