Wwp2 Cas9-KO Strategy

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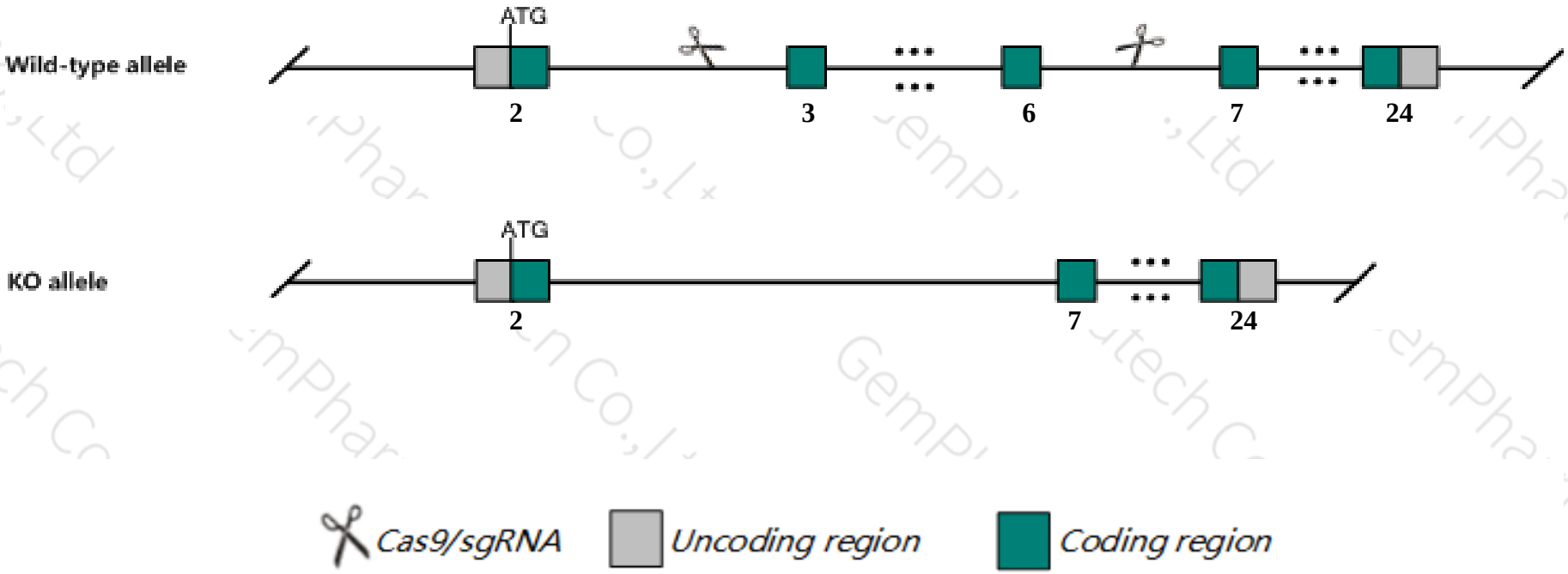
Design Date: 2018-6-12

Project Overview

Project Name	***Wwp2***
Project type	**Cas9-KO**
Strain background	**C57BL/6JGpt**

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Wwp2* gene. The schematic diagram is as follows:



Technical routes

➢ The *Wwp2* gene has 11 transcripts. According to the structure of *Wwp2* gene, exon3-exon6 of *Wwp2-201* (ENSMUST00000166615.2) transcript is recommended as the knockout region.The region contains 505bp coding sequence. Knock out the region will result in disruption of protein function.

➢ In this project we use CRISPR/Cas9 technology to modify *Wwp2* 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,Mice homozygous for a gene trapped allele exhibit decreased body size, domed skull, short snout, twisted snout and overgrown mandibular incisors. Mice homozygous for a different knock-out allele exhibit increased sensitivity to pIpC-treatment.

- Transcript *Wwp2-202/206/206/208* may not be affected.

- The *Wwp2* gene is located on the Chr8. 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）

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Wwp2 WW domain containing E3 ubiquitin protein ligase 2 [Mus musculus (house mouse)]

Gene ID: 66894, updated on 19-Mar-2019

Summary

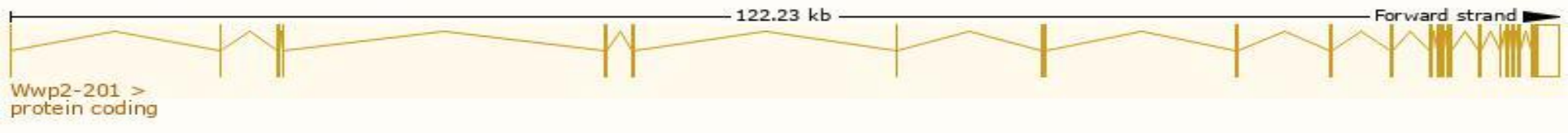
Official Symbol	Wwp2 provided by MGI
Official Full Name	WW domain containing E3 ubiquitin protein ligase 2 provided by MGI
Primary source	MGI:MGI:1914144
See related	Ensembl:ENSMUSG00000031930
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	1300010O06Rik, AA690238, AIP2, AW554328
Expression	Ubiquitous expression in limb E14.5 (RPKM 69.1), testis adult (RPKM 34.2) and 28 other tissues See more
Orthologs	human all

Transcript information（Ensembl）

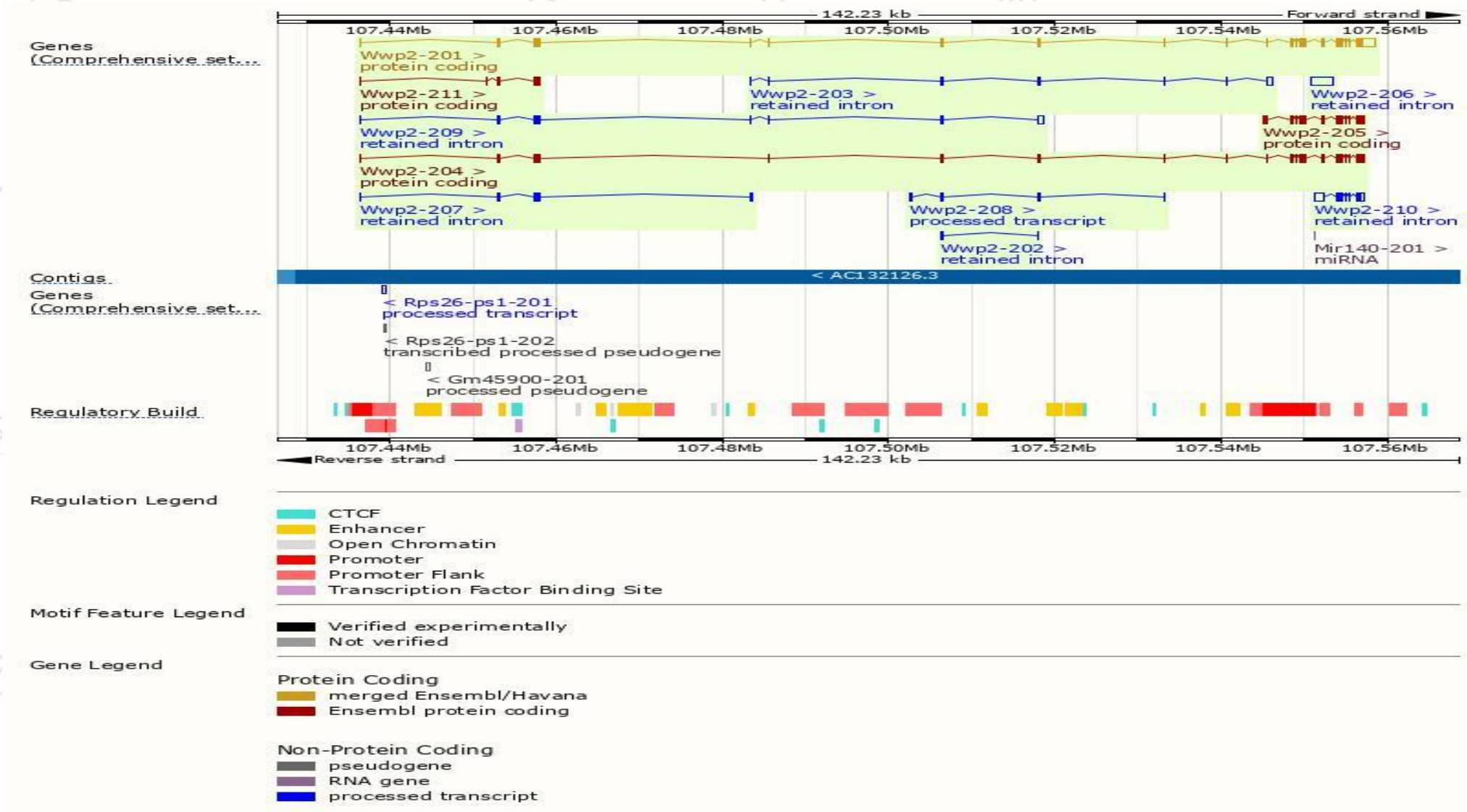
The gene has 11 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Wwp2-201	ENSMUST00000166615.2	4314	870aa	Protein coding	CCDS40467	I3RSH5 Q9DBH0	TSL:1 GENCODE basic APPRIS P1
Wwp2-204	ENSMUST00000212205.1	2758	824aa	Protein coding	-	A0A1D5RM92	TSL:1 GENCODE basic
Wwp2-205	ENSMUST00000212543.1	1996	431aa	Protein coding	-	Q3TXI7	TSL:1 GENCODE basic
Wwp2-211	ENSMUST00000213097.1	425	104aa	Protein coding	-	A0A1D5RLH0	CDS 3' incomplete TSL:3
Wwp2-208	ENSMUST00000212737.1	623	No protein	Processed transcript	-	-	TSL:2
Wwp2-206	ENSMUST00000212559.1	2653	No protein	Retained intron	-	-	TSL:NA
Wwp2-210	ENSMUST00000212993.1	2098	No protein	Retained intron	-	-	TSL:1
Wwp2-209	ENSMUST00000212906.1	1579	No protein	Retained intron	-	-	TSL:1
Wwp2-203	ENSMUST00000212063.1	1548	No protein	Retained intron	-	-	TSL:1
Wwp2-207	ENSMUST00000212645.1	640	No protein	Retained intron	-	-	TSL:2
Wwp2-202	ENSMUST00000212012.1	329	No protein	Retained intron	-	-	TSL:1

The strategy is based on the design of *Wwp2-201* transcript,The transcription is shown below

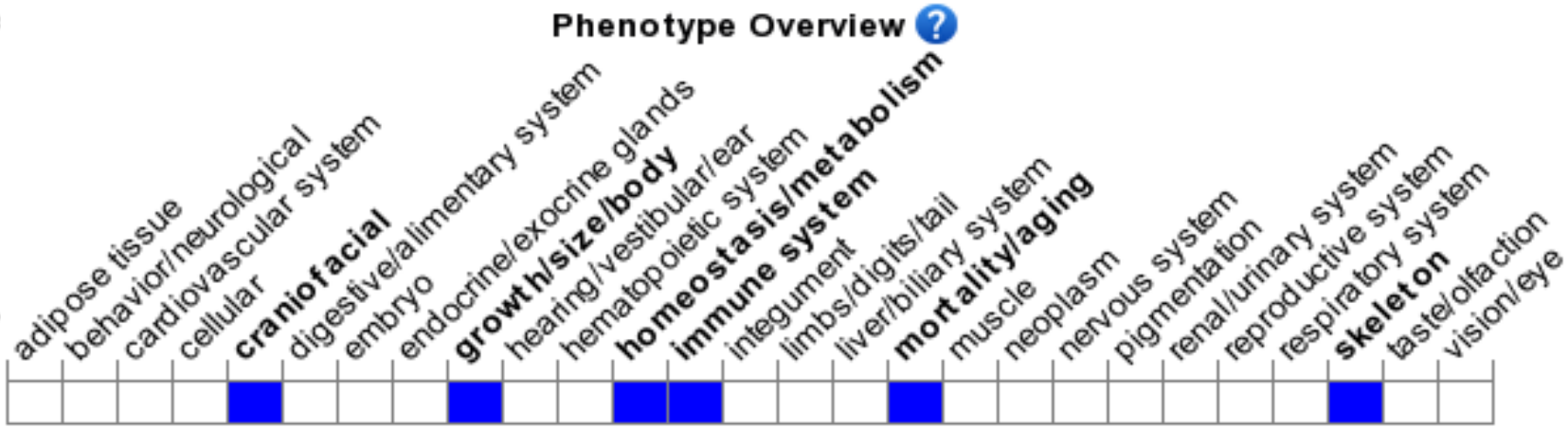


Genomic location distribution



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 gene trapped allele exhibit decreased body size, domed skull, short snout, twisted snout and overgrown mandibular incisors. Mice homozygous for a different knock-out allele exhibit increased sensitivity to pIpC-treatment.

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

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