Wdr91 Cas9-KO Strategy

Designer: Miaomiao Cui

Reviewer: Lingyan Wu

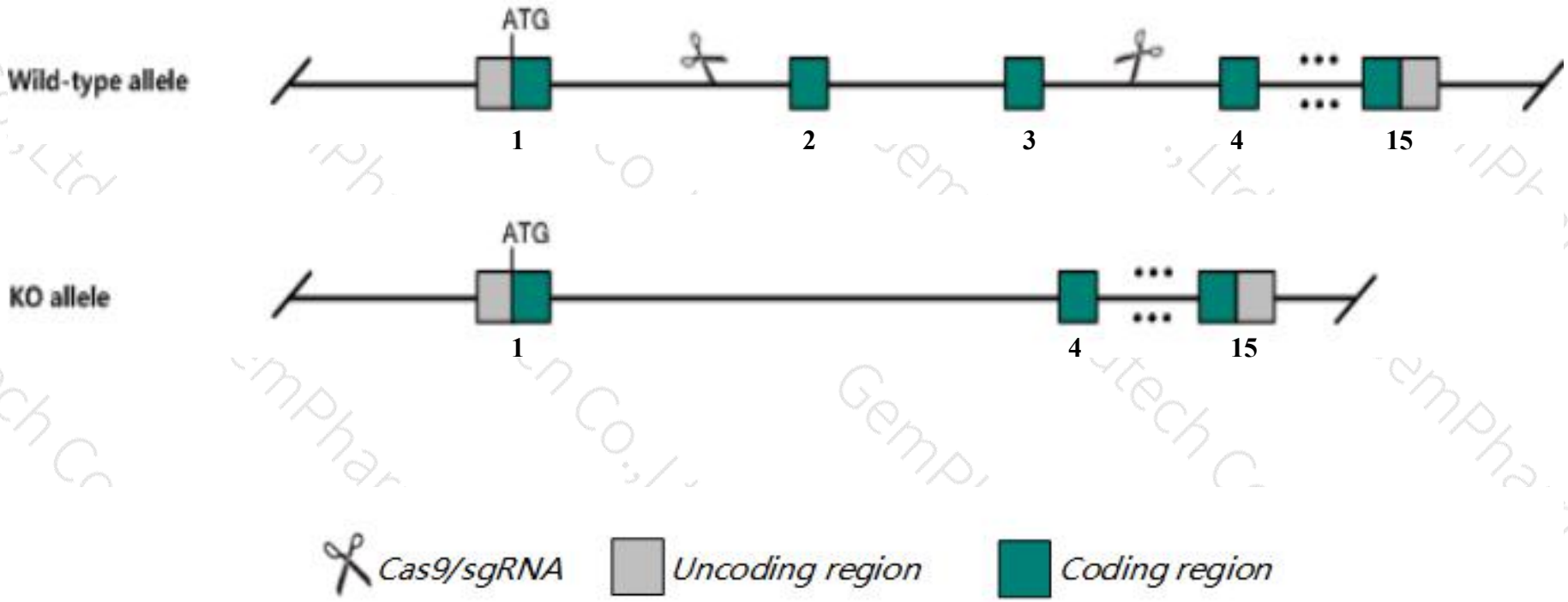
Design Date: 2021-7-9

Project Overview

Project Name	***Wdr91***
Project type	**Cas9-KO**
Strain background	**C57BL/6JGpt**

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Wdr91* gene. The schematic diagram is as follows:



Technical routes

➢ The *Wdr91* gene has 8 transcripts. According to the structure of *Wdr91* gene, exon2-exon3 of *Wdr91-201*(ENSMUST00000081214.11) transcript is recommended as the knockout region.The region contains 388bp coding sequence. Knock out the region will result in disruption of protein function.

➢ In this project we use CRISPR/Cas9 technology to modify *Wdr91* 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 null alle exhibit neonatal lethality associated with intraabdominal bleeding. Mice homozygous for a conditional allele activated in neurons exhibit premature death, decreased brain size and weight, neuron apoptosis and reduced complexity and length of neurites.

➢ The *Wdr91* gene is located on the Chr6. 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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Wdr91 WD repeat domain 91 [Mus musculus (house mouse)]

Gene ID: 101240, updated on 13-Mar-2020

Summary

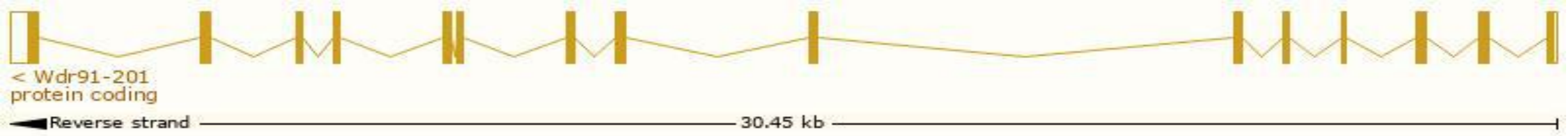
Official Symbol	Wdr91 provided by MGI
Official Full Name	WD repeat domain 91 provided by MGI
Primary source	MGI:MGI:2141558
See related	Ensembl:ENSMUSG00000058486
Gene type	protein coding
RefSeq status	PROVISIONAL
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	9530020G05Rik, AI987683, AU018665
Expression	Ubiquitous expression in kidney adult (RPKM 7.5), thymus adult (RPKM 7.0) and 28 other tissues See more
Orthologs	human all

Transcript information（Ensembl）

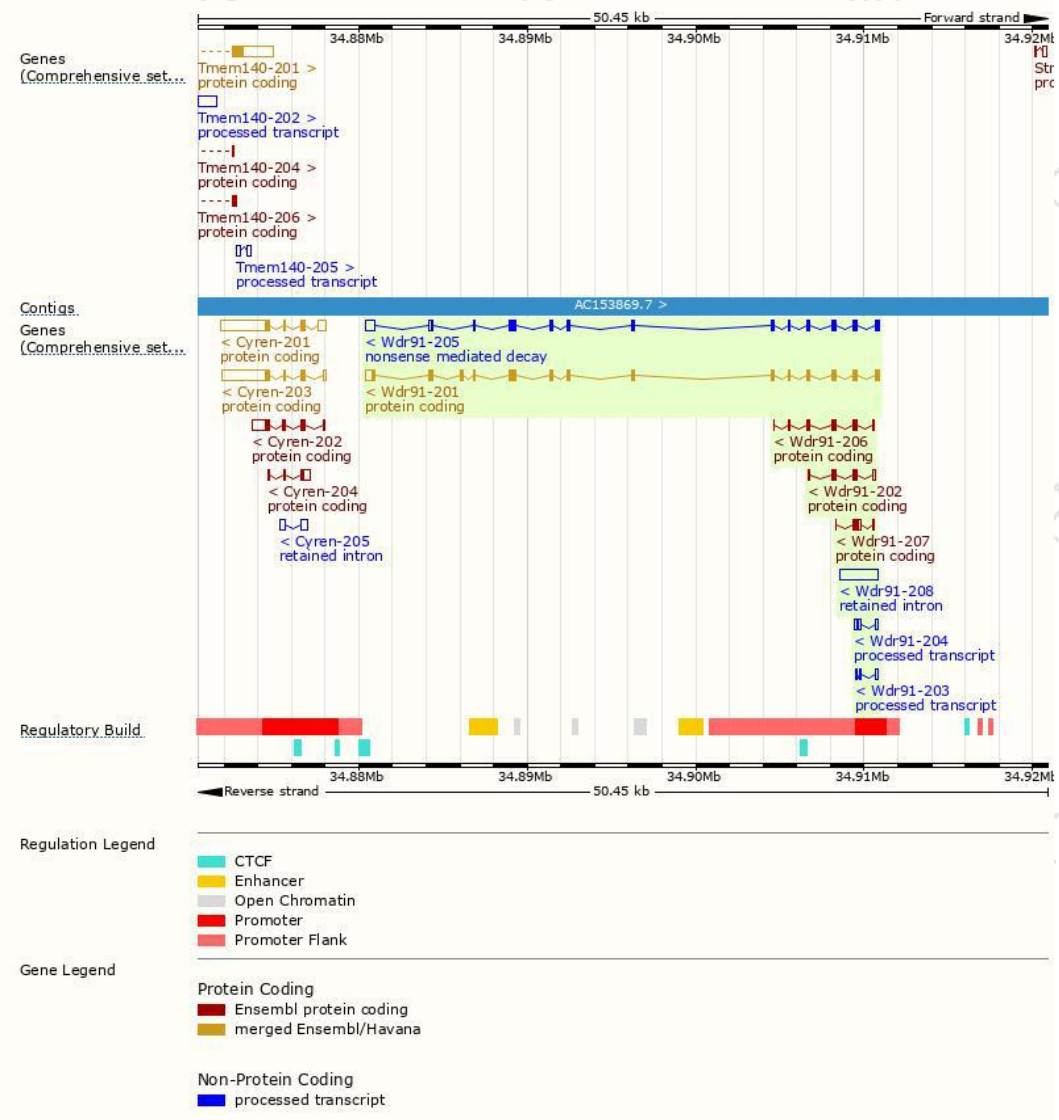
The gene has 8 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Wdr91-201	ENSMUST00000081214.11	2682	748aa	Protein coding	CCDS39457	Q7TMQ7	TSL:1 GENCODE basic APPRIS P1
Wdr91-206	ENSMUST00000149448.7	711	196aa	Protein coding	-	D3Z101	CDS 3' incomplete TSL:5
Wdr91-202	ENSMUST00000133336.7	602	138aa	Protein coding	-	D3Z0V8	CDS 3' incomplete TSL:3
Wdr91-207	ENSMUST00000152488.7	412	58aa	Protein coding	-	D3Z4Z6	CDS 3' incomplete TSL:5
Wdr91-205	ENSMUST00000146968.7	2569	604aa	Nonsense mediated decay	-	S4R1X1	TSL:5
Wdr91-204	ENSMUST00000145765.1	385	No protein	Processed transcript	-	-	TSL:2
Wdr91-203	ENSMUST00000134830.1	340	No protein	Processed transcript	-	-	TSL:3
Wdr91-208	ENSMUST00000201569.1	2287	No protein	Retained intron	-	-	TSL:NA

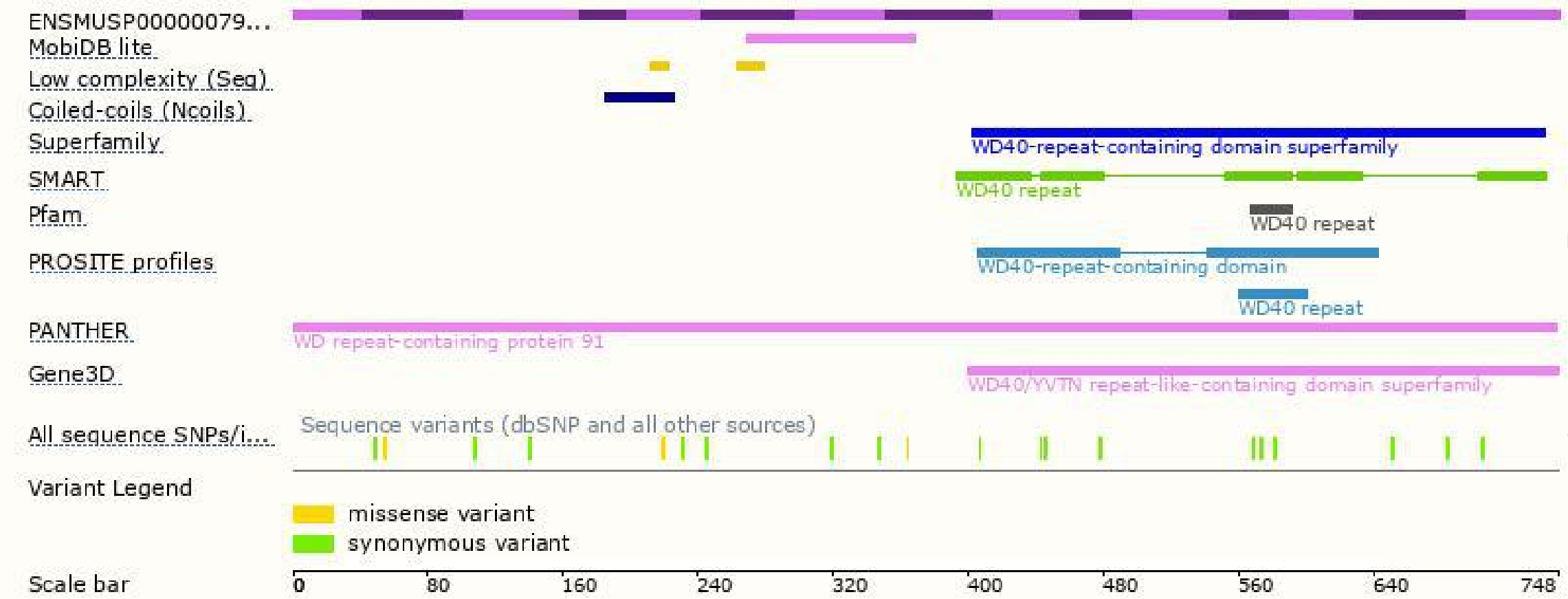
The strategy is based on the design of *Wdr91-201* transcript,the transcription is shown below:



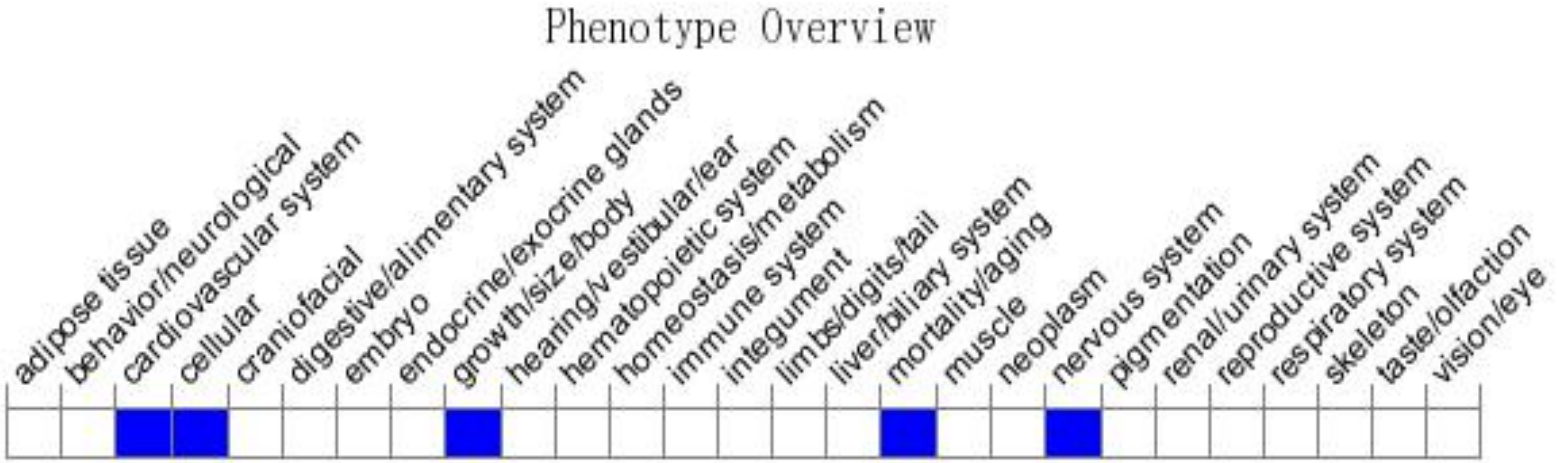
Genomic location distribution



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/).

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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