

Wdr53 Cas9-CKO Strategy

Designer: Miaomiao Cui

Reviewer: Lingyan Wu

Design Date: 2021-7-9

Project Overview

Project Name

Wdr53

Project type

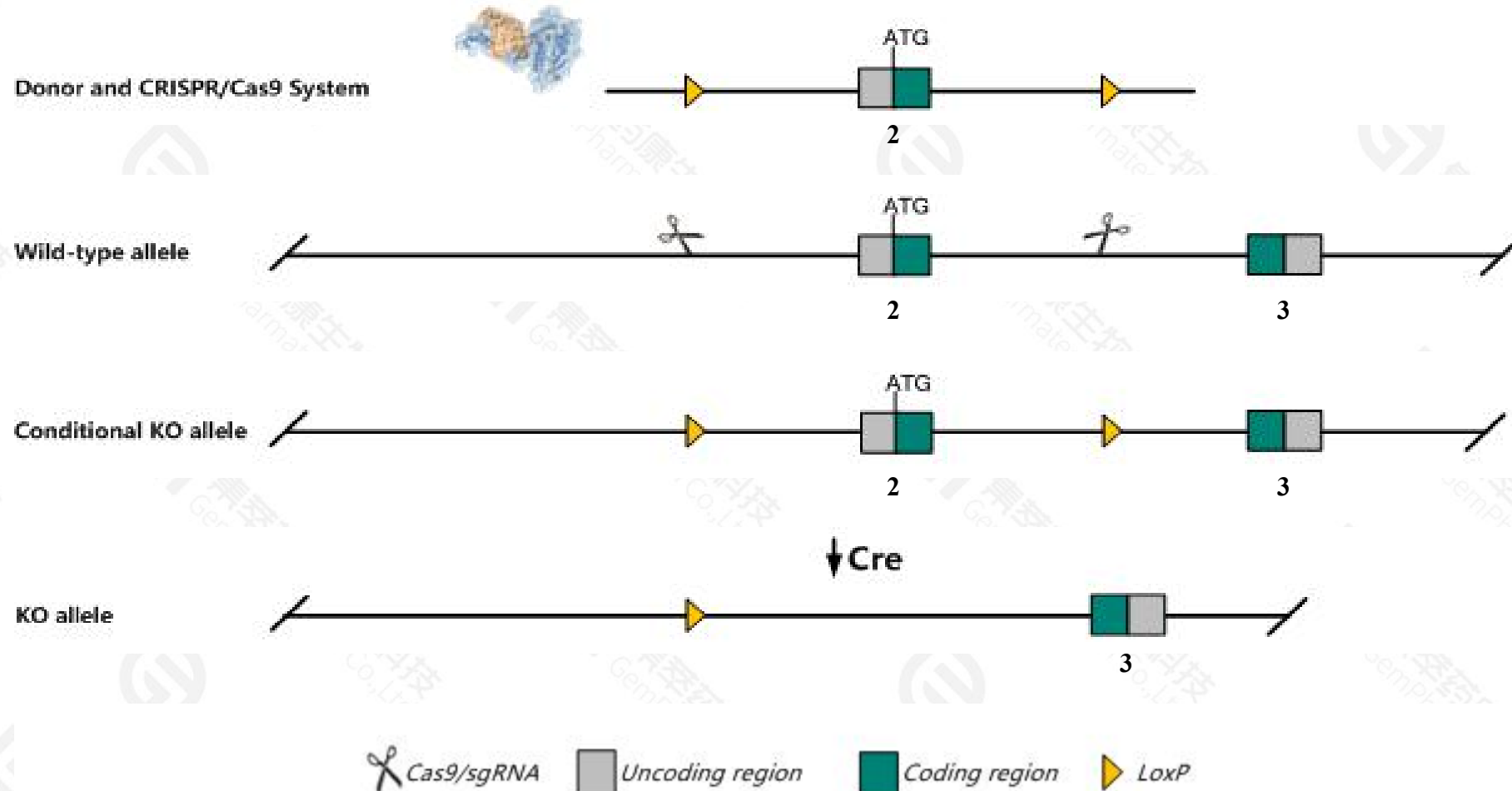
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Wdr53* gene. The schematic diagram is as follows:



Technical routes

- The *Wdr53* gene has 4 transcripts. According to the structure of *Wdr53* gene, exon2 of *Wdr53*-201(ENSMUST00000023474.4) 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 *Wdr53* gene. The brief process is as follows: sgRNA was transcribed in vitro, donor was constructed. Cas9, sgRNA and Donor 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.
- The flox mice was knocked out after mating with mice expressing Cre recombinase, resulting in the loss of function of the target gene in specific tissues and cell types.

- The *Wdr53* gene is located on the Chr16. 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 loxp insertion on gene transcription, RNA splicing and protein translation cannot be predicted at existing technological level.

Gene information (NCBI)

Wdr53 WD repeat domain 53 [Mus musculus (house mouse)]

Gene ID: 68980, updated on 27-Oct-2020

Summary



Official Symbol Wdr53 provided by [MGI](#)

Official Full Name WD repeat domain 53 provided by [MGI](#)

Primary source [MGI:MGI:1916230](#)

See related [Ensembl:ENSMUSG00000022787](#)

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 1500002B03Rik, A1848860

Expression Ubiquitous expression in testis adult (RPKM 11.0), CNS E11.5 (RPKM 4.5) and 24 other tissues [See more](#)

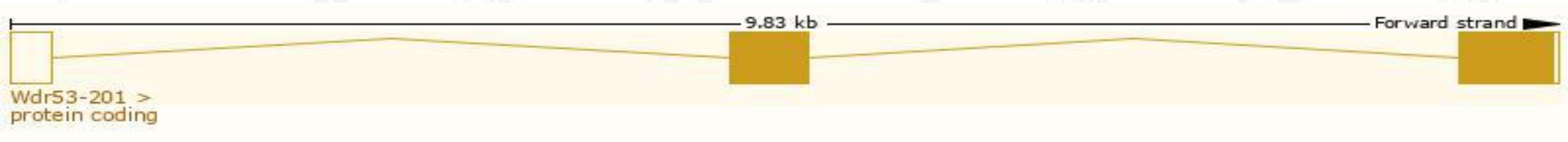
Orthologs [human](#) [all](#)

Transcript information (Ensembl)

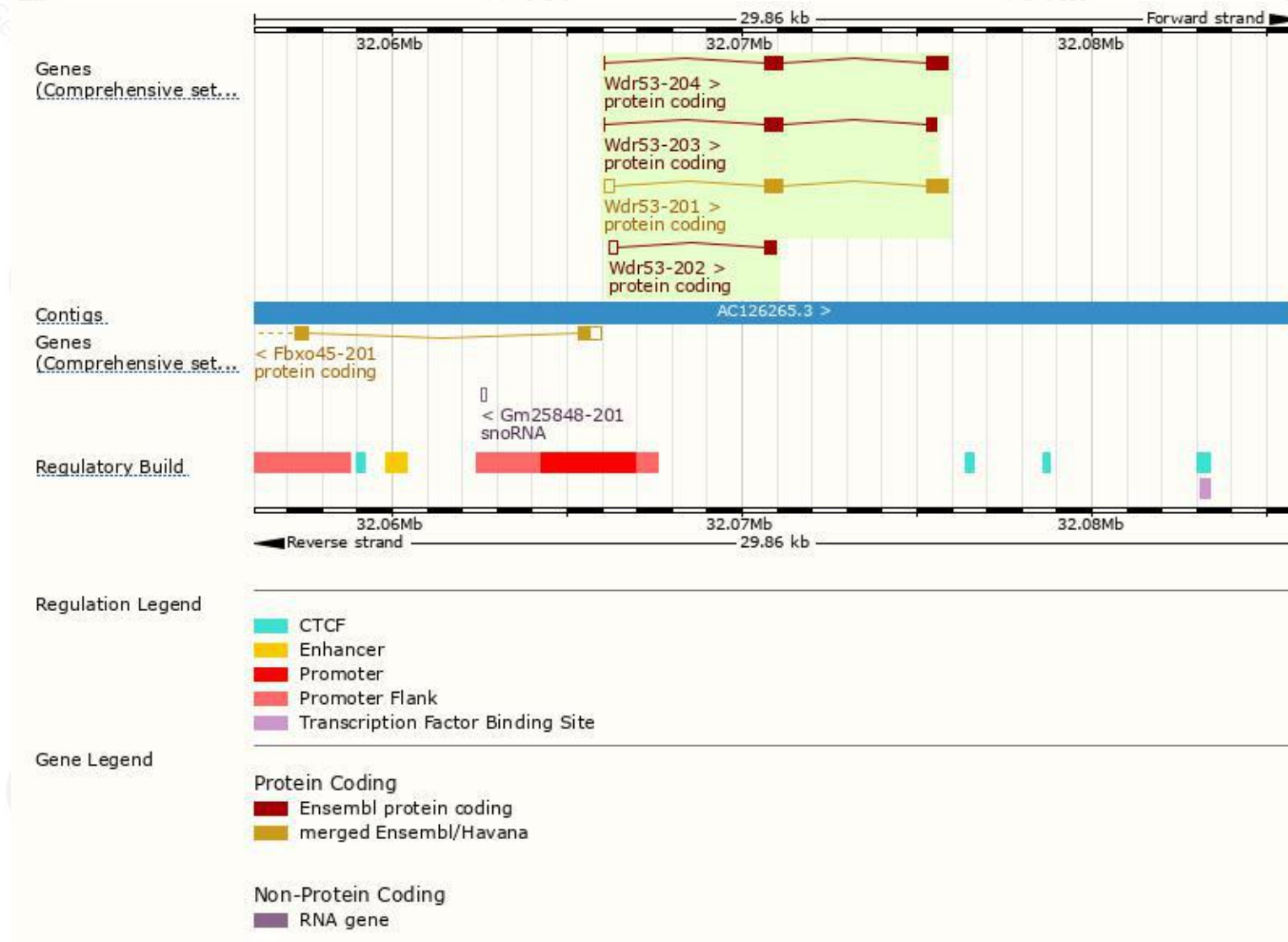
The gene has 4 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Wdr53-201	ENSMUST00000023474.4	1394	358aa	Protein coding	CCDS28118		TSL:1 , GENCODE basic , APPRIS P1 ,
Wdr53-204	ENSMUST00000178573.8	1153	358aa	Protein coding	CCDS28118		TSL:5 , GENCODE basic , APPRIS P1 ,
Wdr53-203	ENSMUST00000141820.8	832	258aa	Protein coding	-		CDS 3' incomplete , TSL:5 ,
Wdr53-202	ENSMUST00000135289.2	566	107aa	Protein coding	-		CDS 3' incomplete , TSL:2 ,

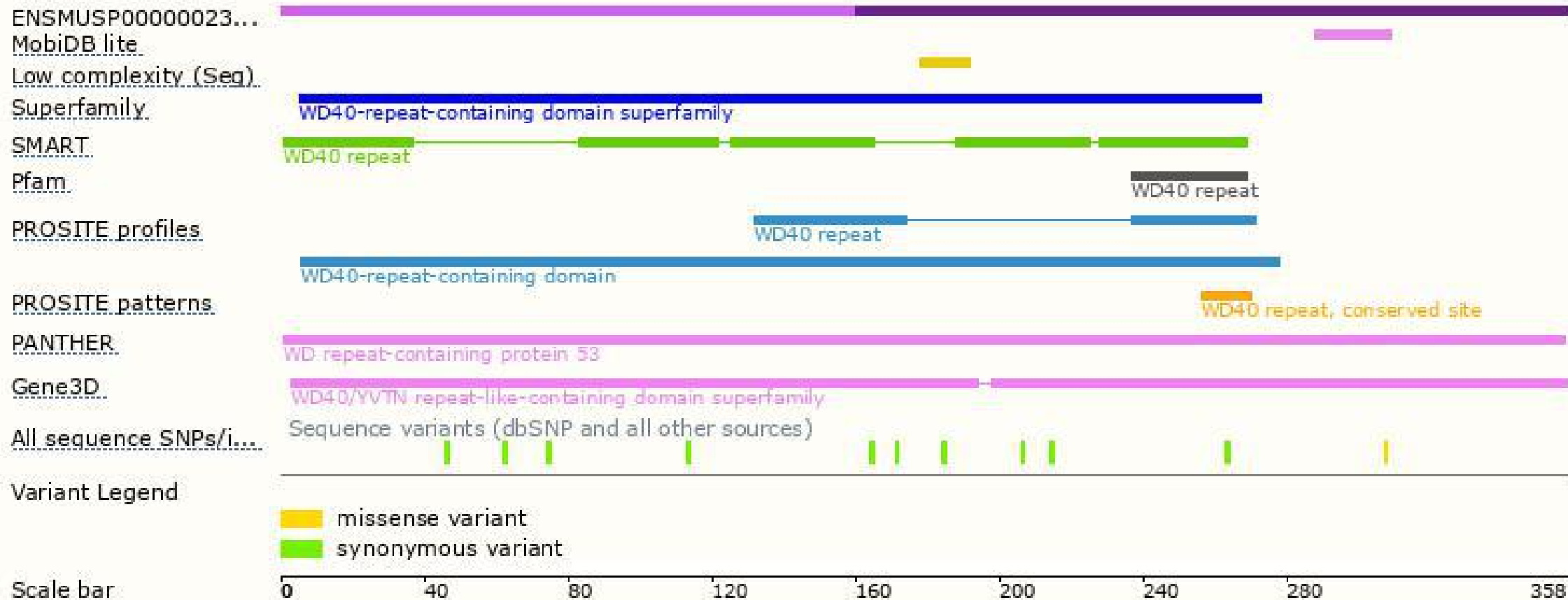
The strategy is based on the design of *Wdr53-201* transcript,the transcription is shown below:



Genomic location distribution



Protein domain



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

Tel: 025-5864 1534

