Wdr53 Cas9-KO Strategy

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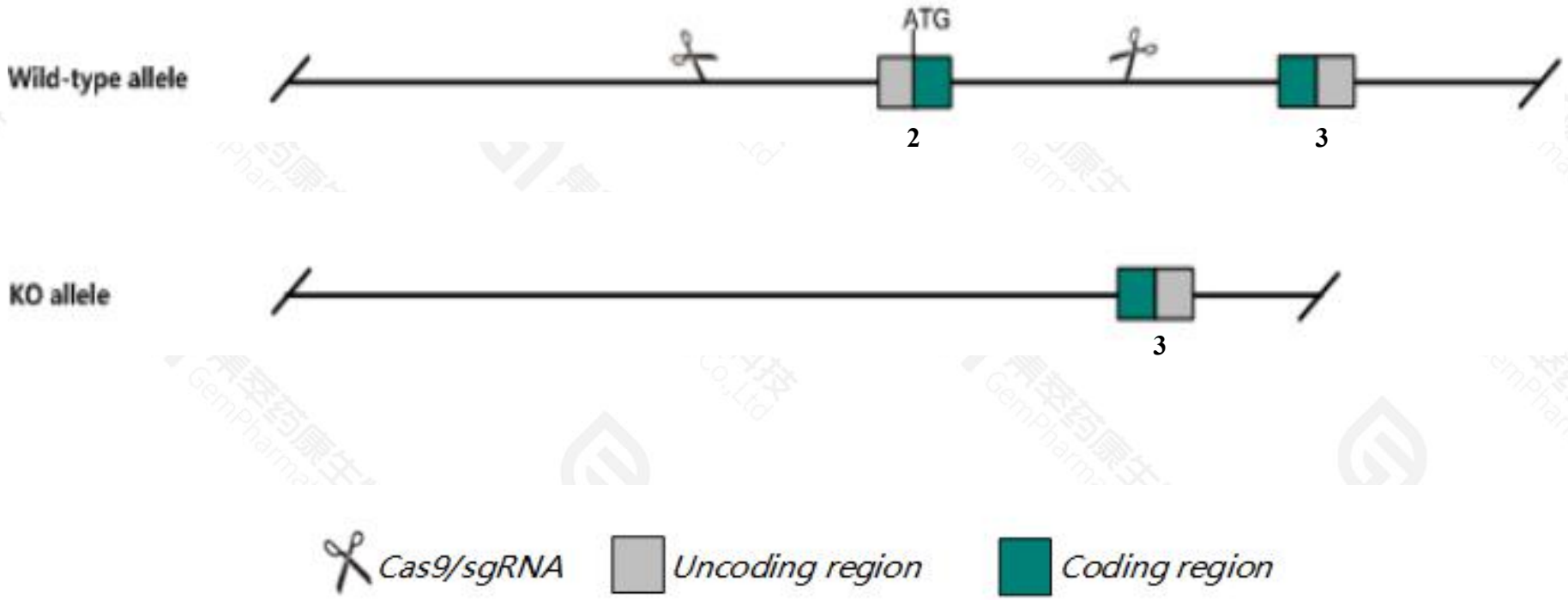
Design Date: 2021-7-9

Project Overview

Project Name	***Wdr53***
Project type	**Cas9-KO**
Strain background	**C57BL/6JGpt**

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.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

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

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

Summary

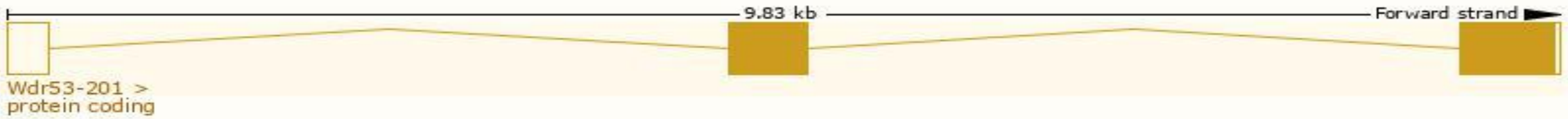
Official Symbol	Wdr53 provided by MGI
Official Full Name	WD repeat domain 53 provided byMGI
Primary source	MGI:MGI:1916230
See related	Ensembl:ENSMUSG00000022787
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	1500002B03Rik, AI848860
Expression	Ubiquitous expression in testis adult (RPKM 11.0), CNS E11.5 (RPKM 4.5) and 24 other tissuesSee more
Orthologs	human all

Transcript information（Ensembl）

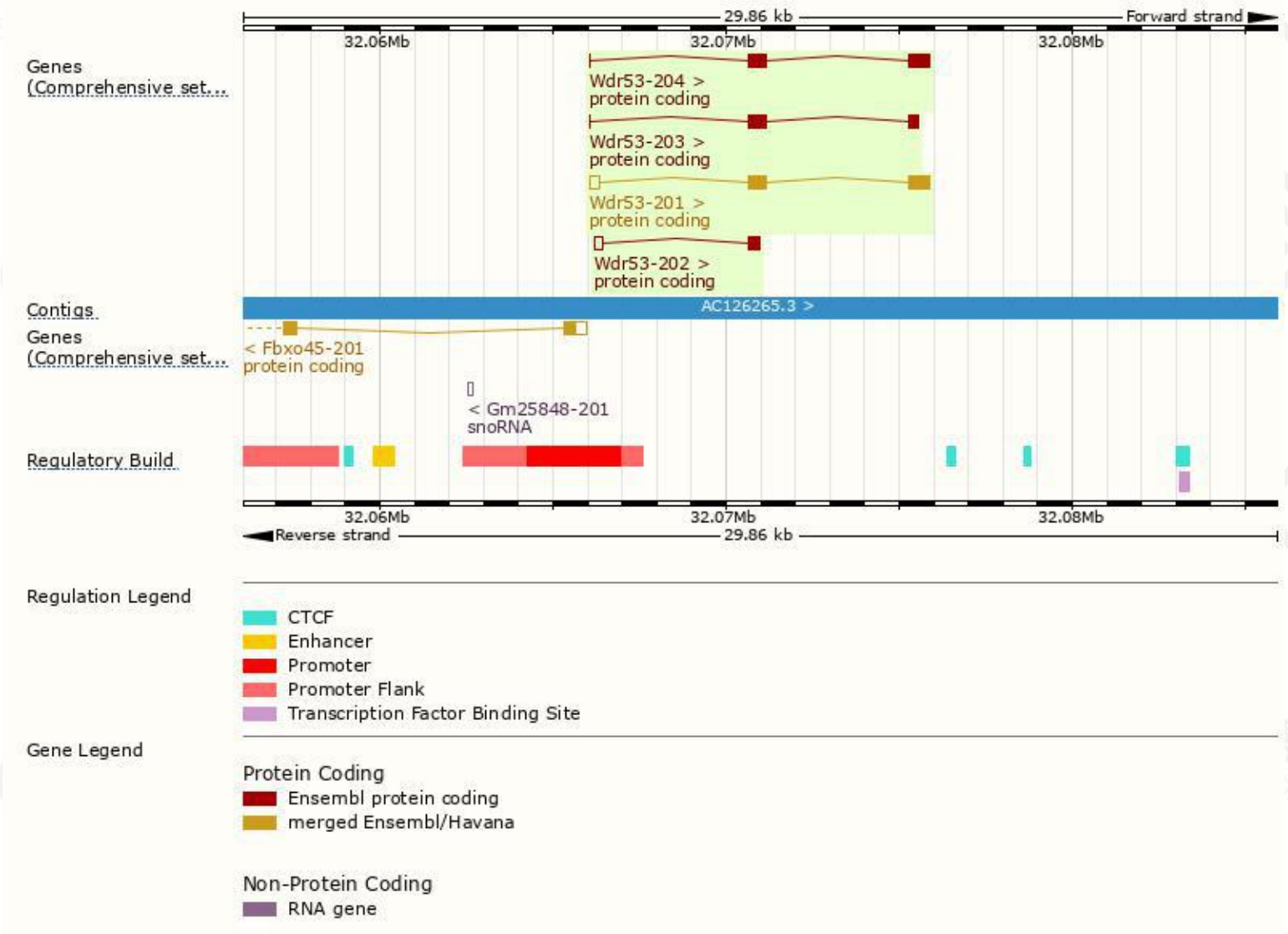
The gene has 4 transcripts,all transcripts are shown below:

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 ,

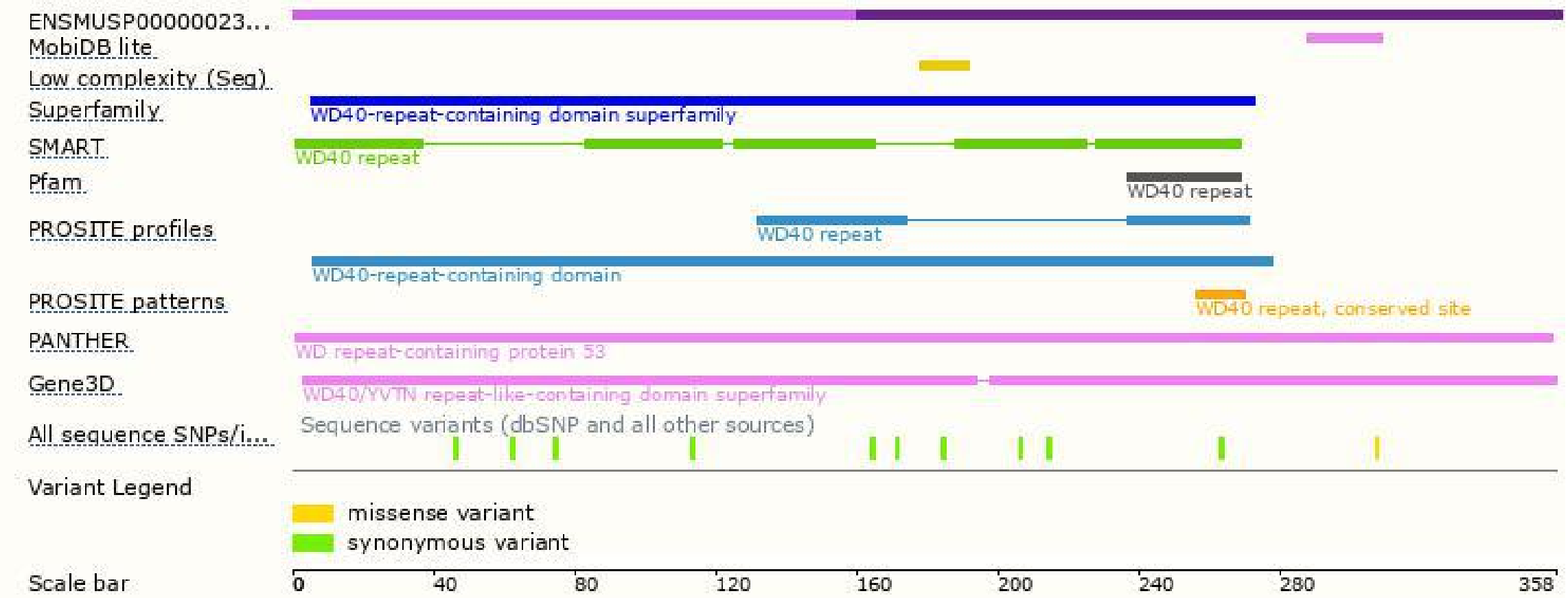
The strategy is based on the design of *Wdr53-201* transcript,the transcription is shown below:



Genomic location distribution



Protein domain



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

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