Wdfy3 Cas9-CKO Strategy

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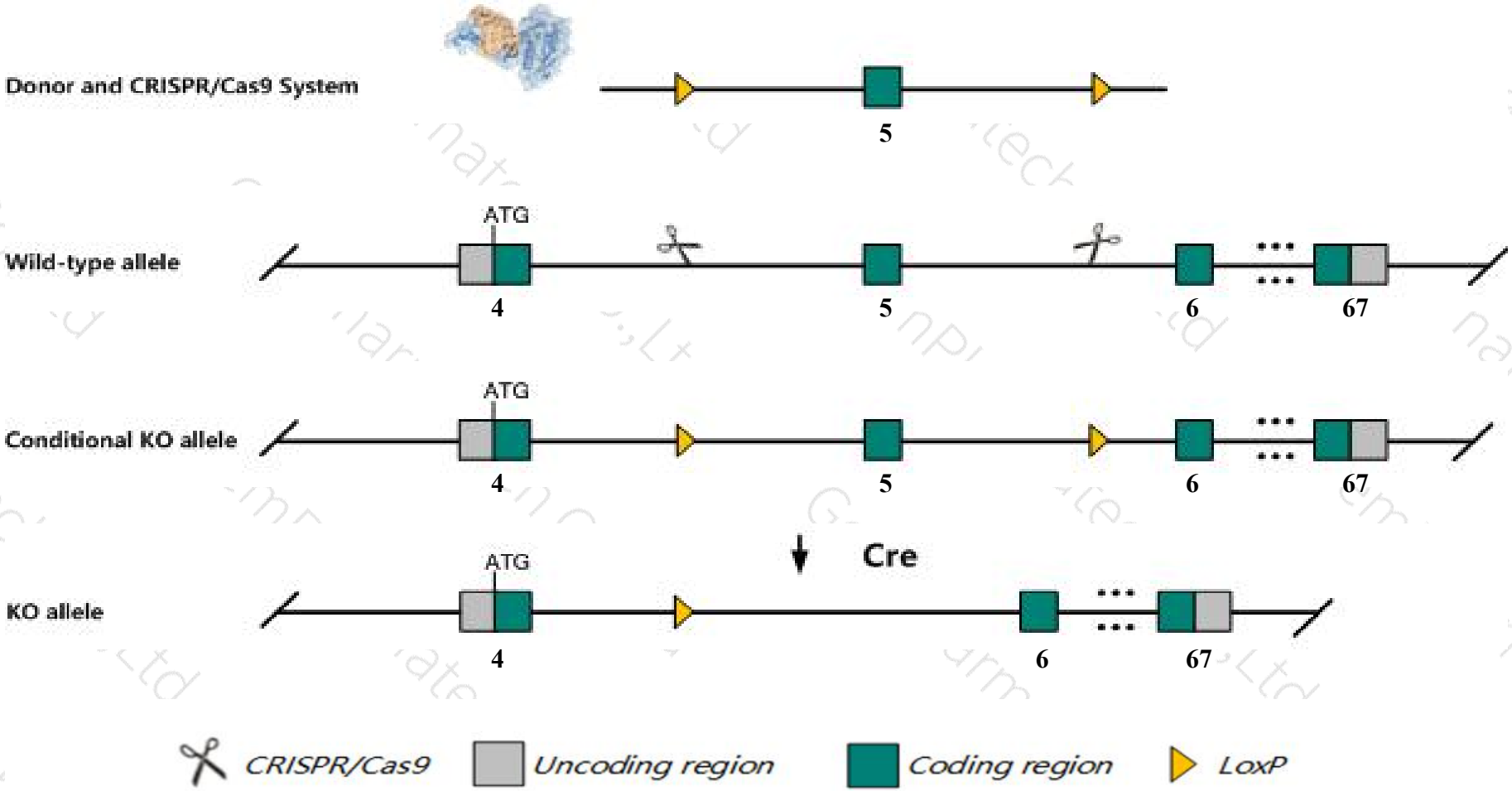
Project Overview

Project Name	***Wdfy3***
Project type	**Cas9-CKO**
Strain background	**C57BL/6JGpt**

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Wdfy3* gene. The schematic diagram is as follows:



Technical routes

- The *Wdfy3* gene has 7 transcripts. According to the structure of *Wdfy3* gene, exon5 of *Wdfy3-201* (ENSMUST00000053177.13) transcript is recommended as the knockout region.The region contains 124bp coding sequence. Knock out the region will result in disruption of protein function.

- In this project we use CRISPR/Cas9 technology to modify *Wdfy3* gene. The brief process is as follows:gRNA was transcribed in vitro, donor was constructed.Cas9, gRNA 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 will be 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.

Notice

- According to the existing MGI data,Mice homozygous for hypomorphic mutations of this gene exhibit perinatal lethality, altered neural progenitor divisions and neuronal migration, a regionally enlarged cerebral cortex, and focal cortical dysplasias.

- The *Wdfy3* gene is located on the Chr5. 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）

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Wdfy3 WD repeat and FYVE domain containing 3 [Mus musculus (house mouse)]

Gene ID: 72145, updated on 19-Feb-2019

Summary

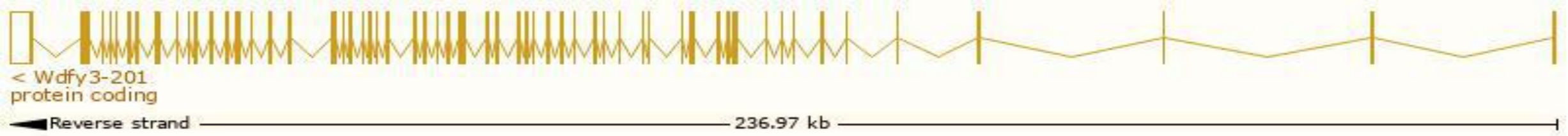
Official Symbol	Wdfy3 provided by MGI
Official Full Name	WD repeat and FYVE domain containing 3 provided byMGI
Primary source	MGI:MGI:1096875
See related	Ensembl:ENSMUSG00000043940
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	2610509D04Rik, ALFY, AW319683, B930017C24, BWF1, Bchs, D5Ertd66e, Ggtb3, ZFYVE25, mKIAA0993
Expression	Ubiquitous expression in cerebellum adult (RPKM 13.9), whole brain E14.5 (RPKM 11.6) and 28 other tissuesSee more
Orthologs	human all

Transcript information（Ensembl）

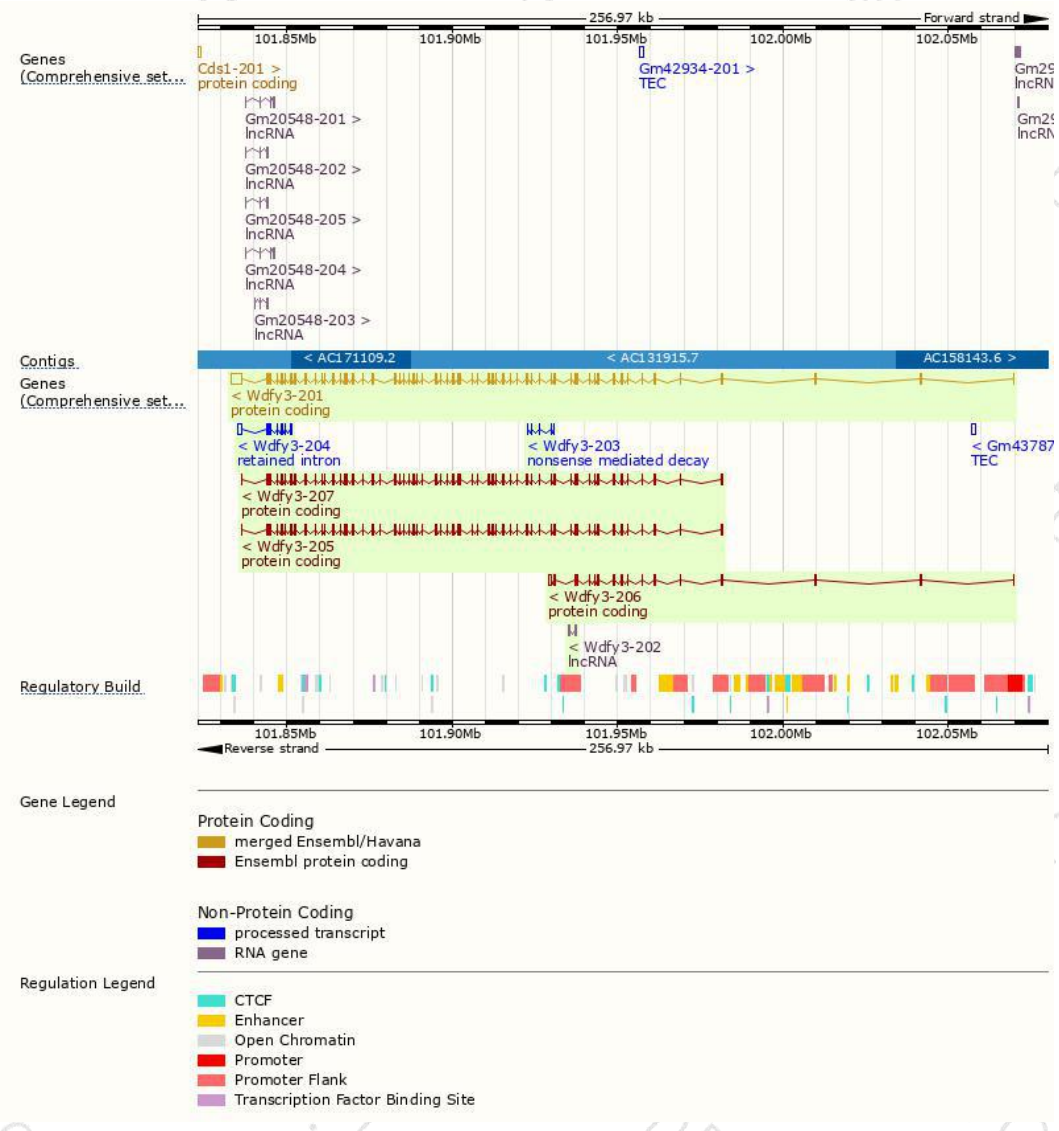
The gene has 7 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Wdfy3-201	ENSMUST00000053177.13	14274	3508aa	Protein coding	CCDS19473	Q6VNB8	TSL:1 GENCODE basic APPRIS P2
Wdfy3-205	ENSMUST00000174598.7	10581	3526aa	Protein coding	-	G3UYW1	TSL:5 GENCODE basic APPRIS ALT1
Wdfy3-207	ENSMUST00000212024.1	10539	3512aa	Protein coding	-	A0A1D5RLV7	TSL:5 GENCODE basic
Wdfy3-206	ENSMUST00000174698.1	3858	913aa	Protein coding	-	Q6VNB8	TSL:1 GENCODE basic
Wdfy3-203	ENSMUST00000172927.1	641	124aa	Nonsense mediated decay	-	G3UY81	CDS 5' incomplete TSL:5
Wdfy3-204	ENSMUST00000173955.1	2713	No protein	Retained intron	-	-	TSL:1
Wdfy3-202	ENSMUST00000172512.1	704	No protein	lncRNA	-	-	TSL:3

The strategy is based on the design of *Wdfy3-201* transcript,The transcription is shown below

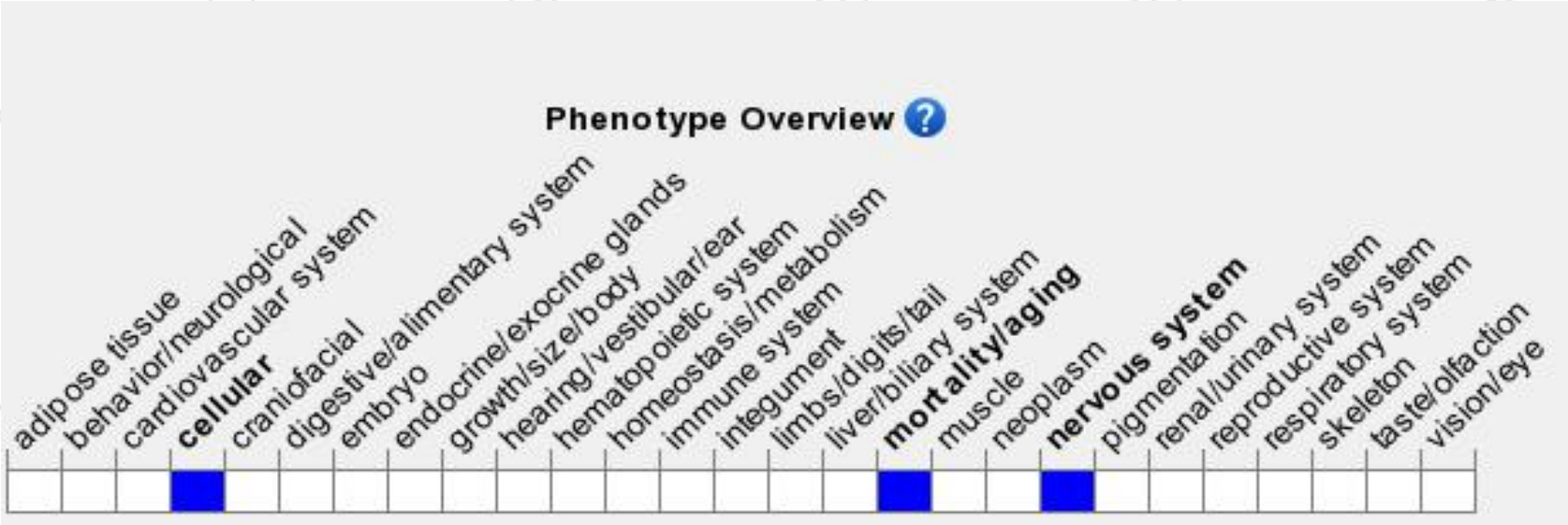


Genomic location distribution



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 hypomorphic mutations of this gene exhibit perinatal lethality, altered neural progenitor divisions and neuronal migration, a regionally enlarged cerebral cortex, and focal cortical dysplasias.

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

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