

Dkk3 Cas9-KO Strategy

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Project Overview



Project Name

Dkk3

Project type

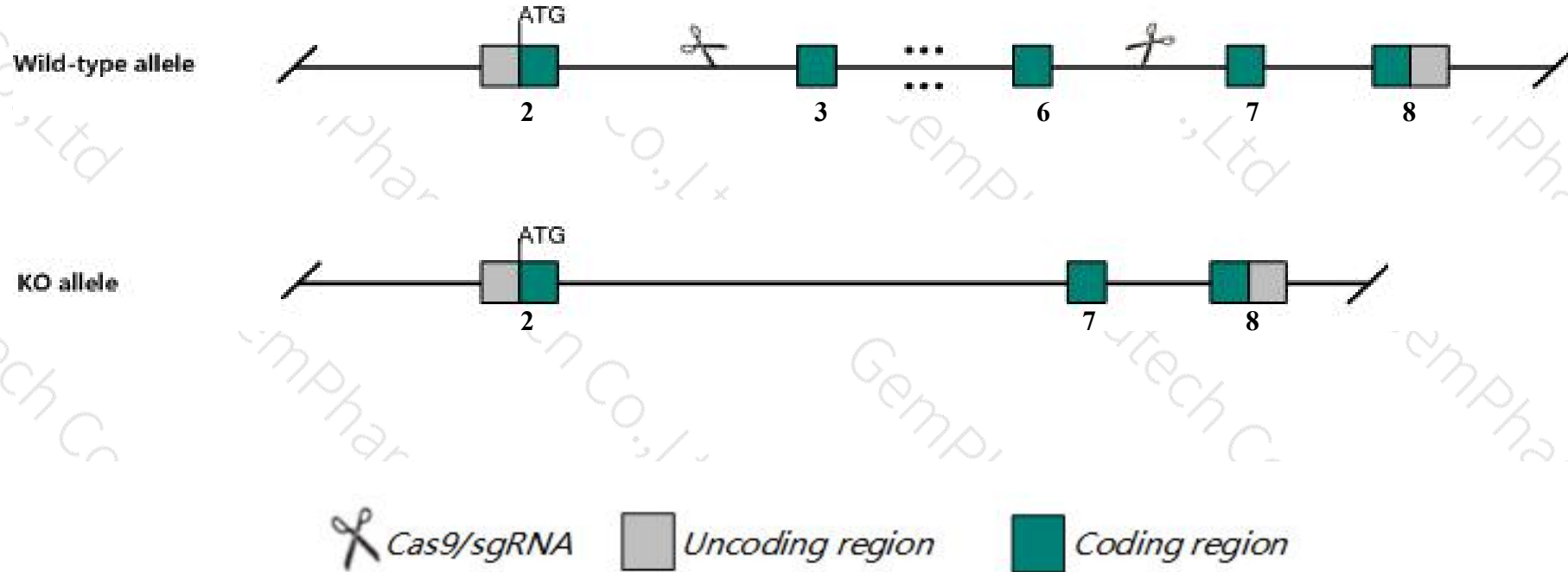
Cas9-KO

Strain background

C57BL/6J

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Dkk3* gene. The schematic diagram is as follows:



- The *Dkk3* gene has 1 transcript. According to the structure of *Dkk3* gene, exon3-exon6 of *Dkk3-201* (ENSMUST00000033036.6) transcript is recommended as the knockout region. The region contains 460bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Dkk3* gene. The brief process is as follows: sgRNA was transcribed in vitro. Cas9 and sgRNA were microinjected into the fertilized eggs of C57BL/6J 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/6J mice.

- According to the existing MGI data, mice homozygous for a knock-out allele are viable, fertile and euthyroid but exhibit hyperactivity, a slight but significant decrease in the frequency of natural killer cells, and significantly increased IgM, hemoglobin, and hematocrit levels.
- The *Dkk3* gene is located on the Chr7. 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)

Dkk3 dickkopf WNT signaling pathway inhibitor 3 [Mus musculus (house mouse)]

Gene ID: 50781, updated on 31-Jan-2019

Summary



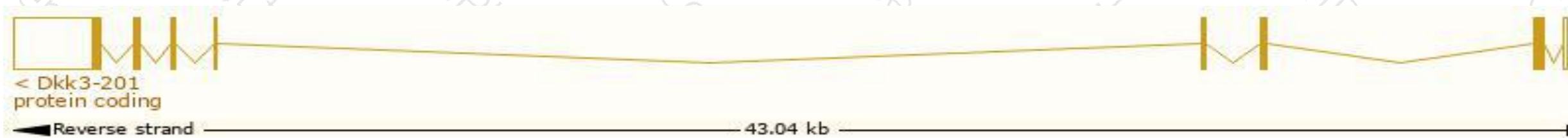
Official Symbol	Dkk3 provided by MGI
Official Full Name	dickkopf WNT signaling pathway inhibitor 3 provided by MGI
Primary source	MGI:MGI:1354952
See related	Ensembl:ENSMUSG00000030772
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	AW061014, C87148, dkk-3, mDkk-3
Expression	Broad expression in cortex adult (RPKM 37.0), bladder adult (RPKM 29.9) and 20 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

The gene has 1 transcript, and the transcript is shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Dkk3-201	ENSMUST00000033036.6	3359	349aa	Protein coding	CCDS21752	Q9QUN9	TSL:1 GENCODE basic APPRIS P1

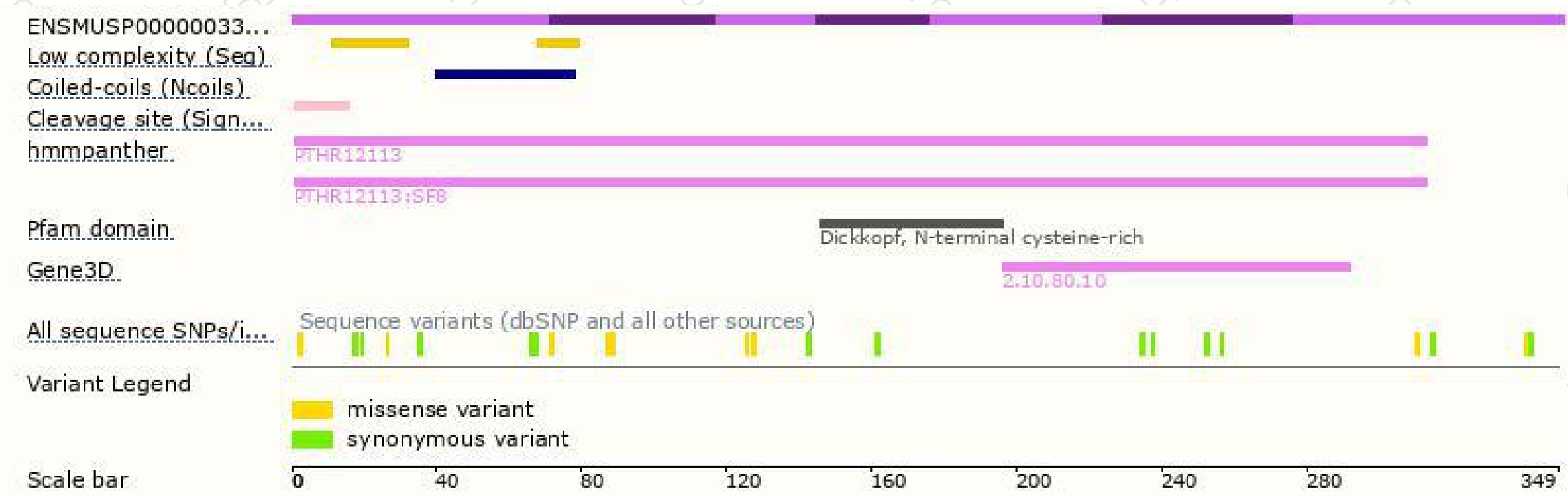
The strategy is based on the design of *Dkk3-201* transcript, The transcription is shown below:



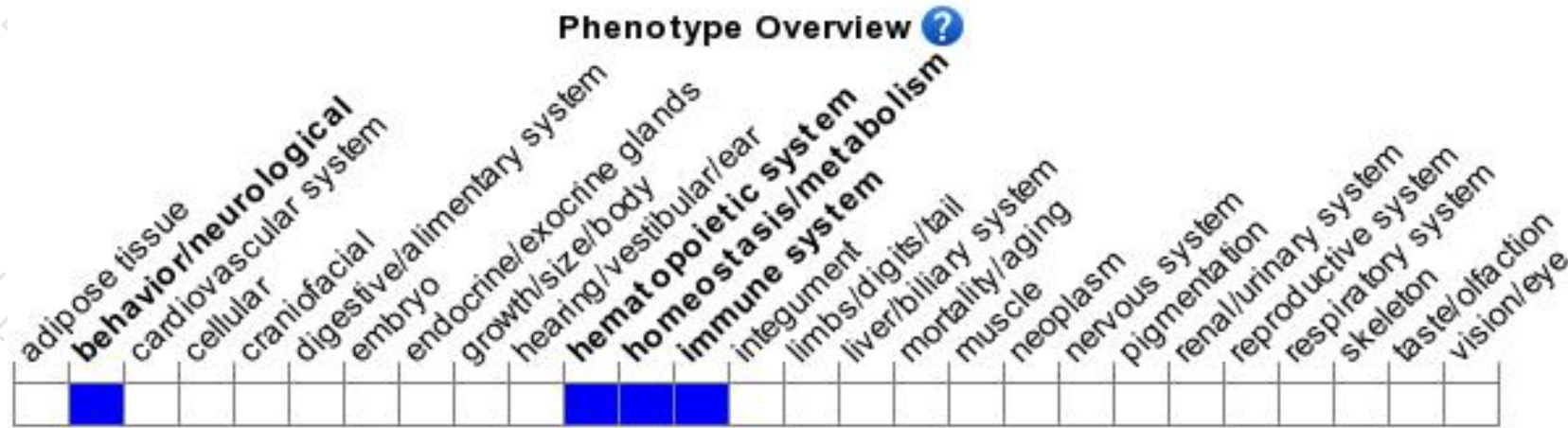
Genomic location distribution



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 knock-out allele are viable, fertile and euthyroid but exhibit hyperactivity, a slight but significant decrease in the frequency of natural killer cells, and significantly increased IgM, hemoglobin, and hematocrit levels.

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

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