

Wnk4 Cas9-KO Strategy

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Project Overview

Project Name

Wnk4

Project type

Cas9-KO

Strain background

C57BL/6JGpt

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Wnk4* gene. The schematic diagram is as follows:



- The *Wnk4* gene has 5 transcripts. According to the structure of *Wnk4* gene, exon3-exon11 of *Wnk4-201* (ENSMUST00000103108.7) transcript is recommended as the knockout region. The region contains 1363bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Wnk4* gene. The brief process is as follows: CRISPR/Cas9 system w

- According to the existing MGI data, Mice homozygous for a null allele display increased Na^+ , K^+ and Cl^- urinary excretion, alkalosis and decreased plasma Cl^- , K^+ , Mg^{2+} and renin levels. Mice homozygous for a point mutation exhibit acidosis, hypertension, increased circulating potassium levels and decreased potassium excretion.
- The KO region contains *Gm11615-201* gene. Knockout the region may affect the function of *Gm11615-201* gene. Transcript *Wnk4-205* CDS 5' is incomplete affected, whether it will be affected is unknown.
- The *Wnk4* gene is located on the Chr11. 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.

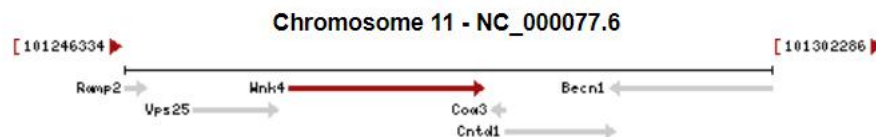
Gene information (NCBI)

Wnk4 WNK lysine deficient protein kinase 4 [*Mus musculus* (house mouse)]

Gene ID: 69847, updated on 1-Oct-2019

Summary

Official Symbol	Wnk4 provided by MGI
Official Full Name	WNK lysine deficient protein kinase 4 provided by MGI
Primary source	MGI:MGI:1917097
See related	Ensembl:ENSMUSG000000035112
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	Pha2b; Prkwk4; 2010002J11Rik
Expression	Broad expression in kidney adult (RPKM 36.0), colon adult (RPKM 9.7) and 16 other tissues See more
Orthologs	human all

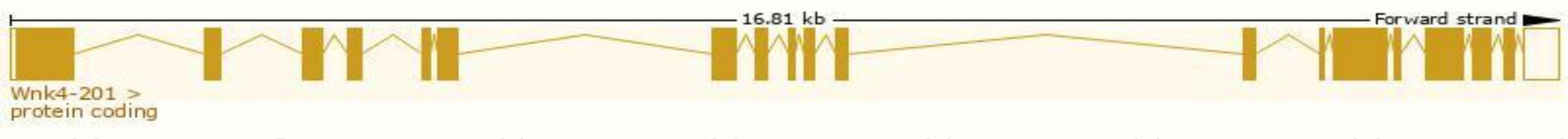


Transcript information (Ensembl)

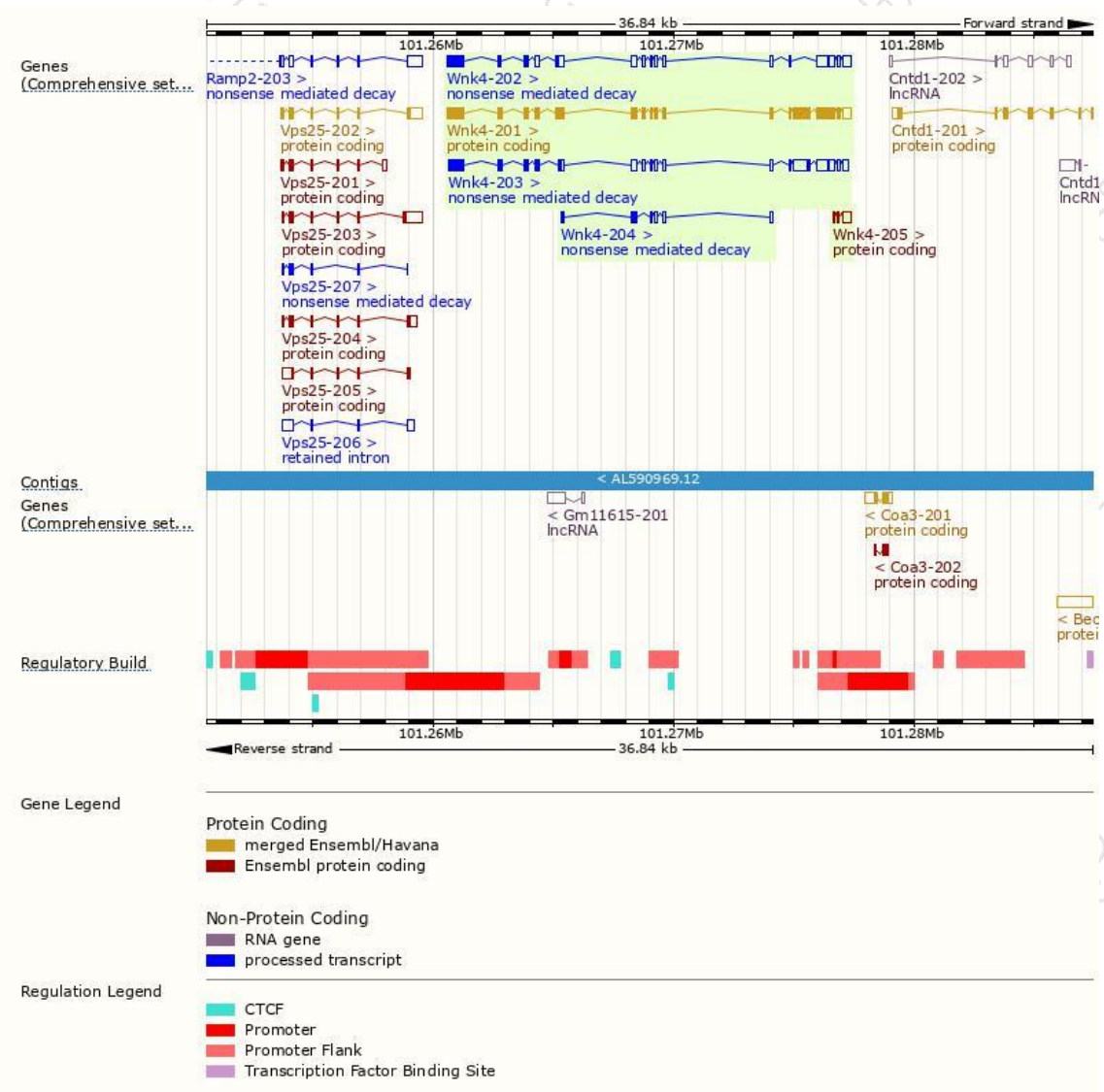
The gene has 5 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Wnk4-201	ENSMUST00000103108.7	4117	1222aa	Protein coding	CCDS25459	Q80UE6	TSL:1 GENCODE basic APPRIS P1
Wnk4-205	ENSMUST00000170372.1	462	30aa	Protein coding	-	F6Z709	CDS 5' incomplete TSL:3
Wnk4-203	ENSMUST00000147741.8	3836	413aa	Nonsense mediated decay	-	E9PZ38	TSL:5
Wnk4-202	ENSMUST00000139487.7	3462	285aa	Nonsense mediated decay	-	E9Q470	TSL:1
Wnk4-204	ENSMUST00000170056.1	850	153aa	Nonsense mediated decay	-	F6X7K7	CDS 5' incomplete TSL:5

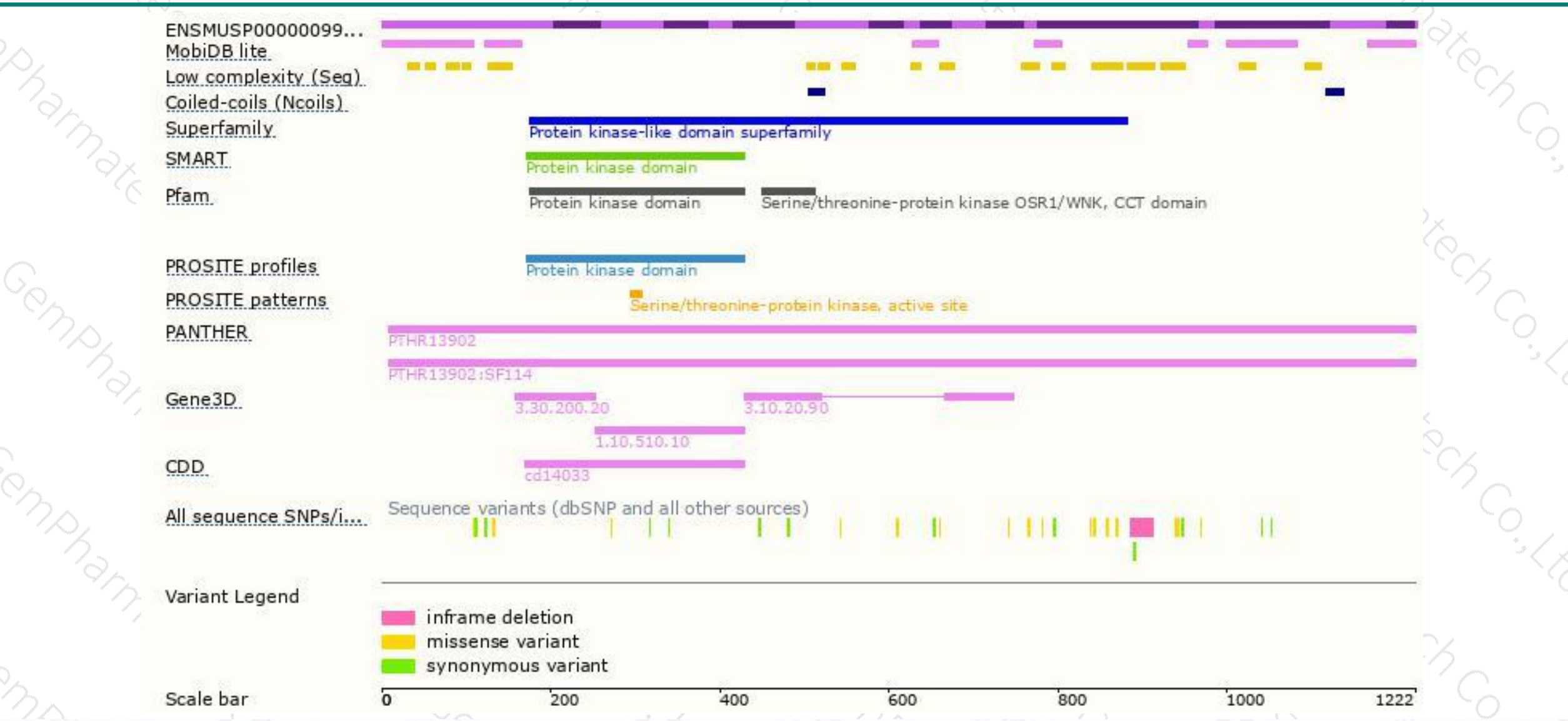
The strategy is based on the design of *Wnk4-201* transcript,The transcription is shown below



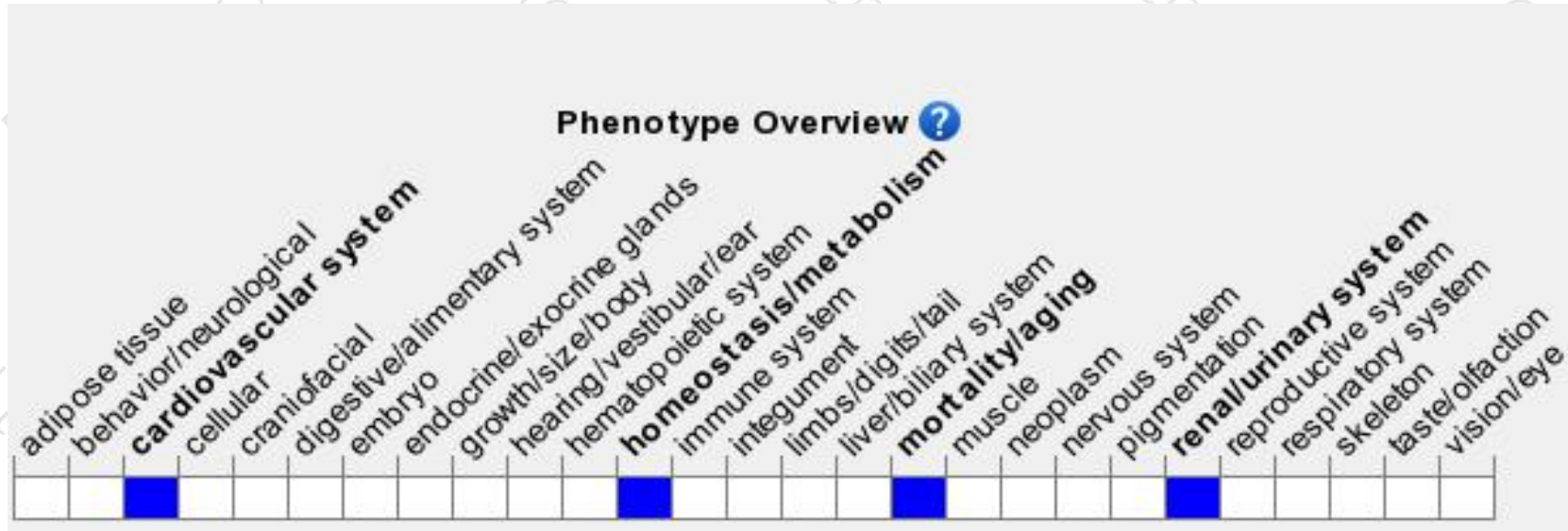
Genomic location distribution



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 null allele display increased Na⁺, K⁺ and Cl⁻ urinary excretion, alkalosis and decreased plasma Cl⁻, K⁺, Mg²⁺ and renin levels. Mice homozygous for a point mutation exhibit acidosis, hypertension, increased circulating potassium levels and decreased potassium excretion.

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

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