Wnt11 Cas9-CKO Strategy

Designer: Huan Fan

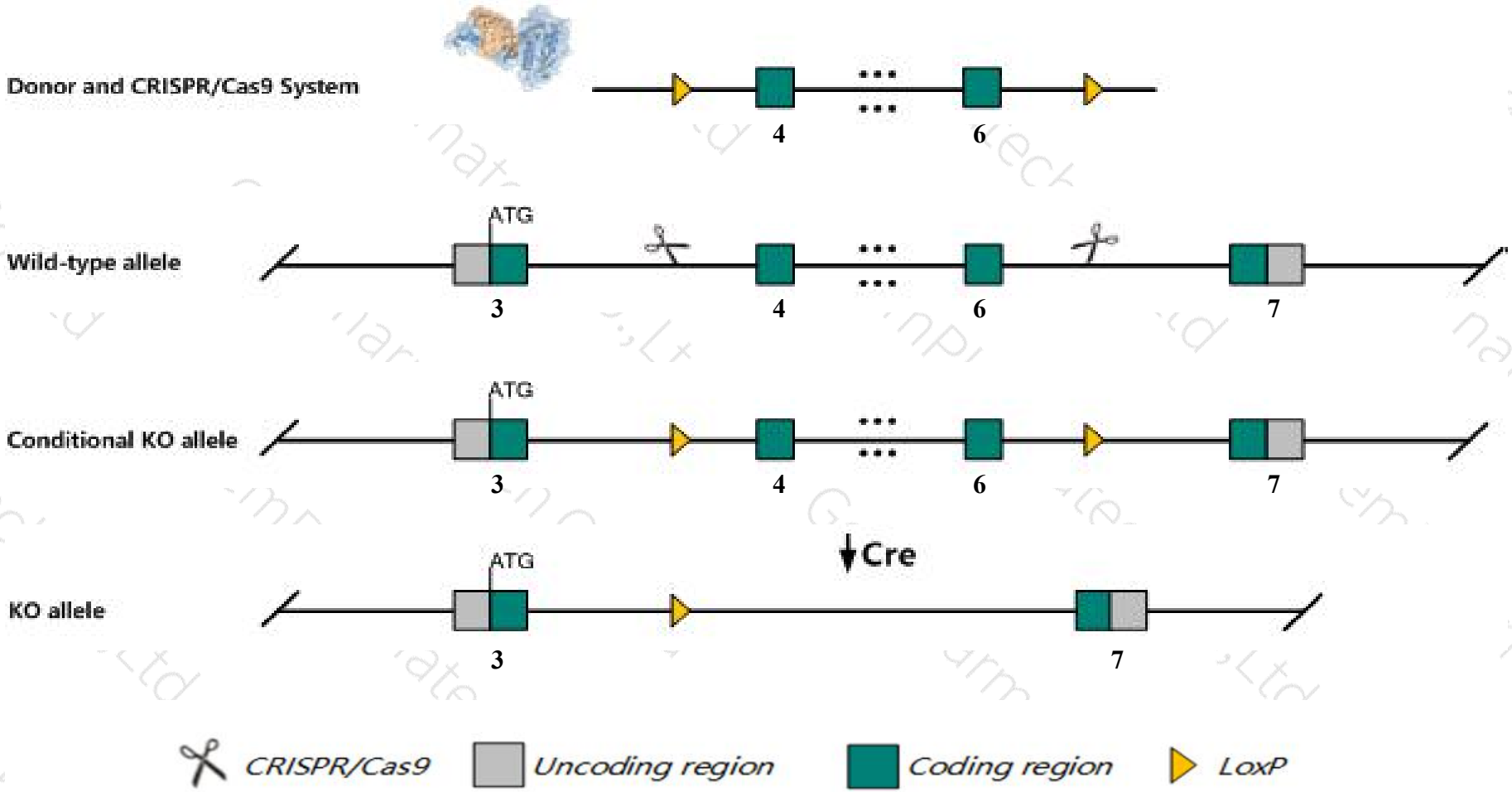
Design Date: 2019-10-18

Project Overview

Project Name	***Wnt11***
Project type	**Cas9-CKO**
Strain background	**C57BL/6JGpt**

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Wnt11* gene. The schematic diagram is as follows:



Technical routes

- The *Wnt11* gene has 6 transcripts. According to the structure of *Wnt11* gene, exon4-exon6 of *Wnt11-201* (ENSMUST00000067495.8) transcript is recommended as the knockout region.The region contains most of the coding sequence.Knock out the region will result in disruption of protein function.

- In this project we use CRISPR/Cas9 technology to modify *Wnt11* gene. The brief process is as follows:CRISPR/Cas9 system 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,Homozygous mutation of this gene results in extensive embryonic lethality and mutants surviving to birth die within the first 2 days of life. The kidneys are small and exhibit delayed development.

➢The KO region deletes most of the coding sequence, but does not result in frameshift.

➢ The *Wnt11* 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 loxp insertion on gene transcription, RNA splicing and protein translation cannot be predicted at existing technological level.

Gene information （NCBI）

集萃药康 GemPharmatech

Wnt11 wingless-type MMTV integration site family, member 11 [Mus musculus (house mouse)]

Gene ID: 22411, updated on 19-Mar-2019

Summary

Official Symbol	Wnt11 provided by MGI
Official Full Name	wingless-type MMTV integration site family, member 11 provided by MGI
Primary source	MGI:MGI:101948
See related	Ensembl:ENSMUSG00000015957
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
Expression	Broad expression in ovary adult (RPKM 15.3), limb E14.5 (RPKM 15.2) and 16 other tissues See more
Orthologs	human all

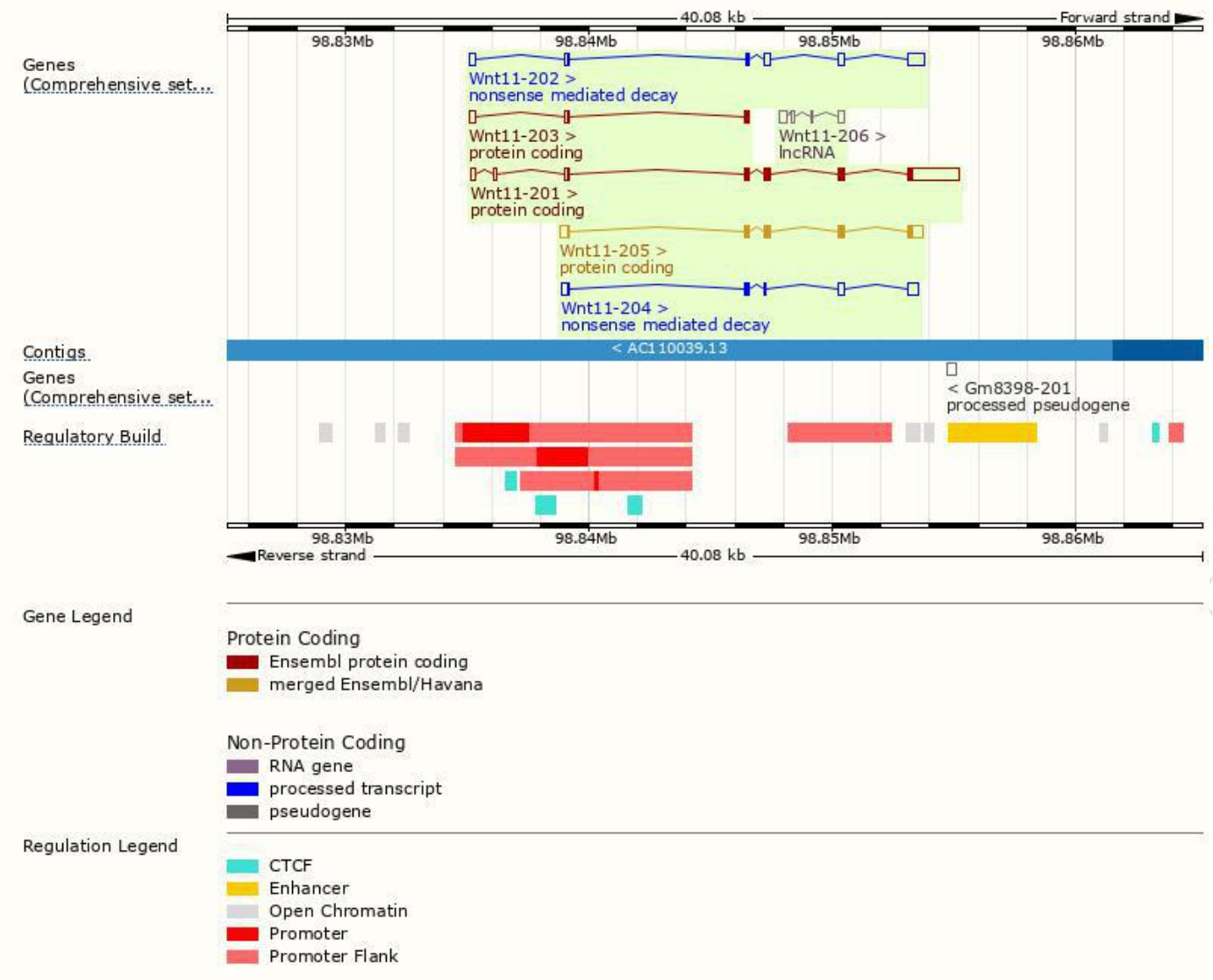
Transcript information（Ensembl）

The gene has 6 transcripts,all transcripts are shown below:

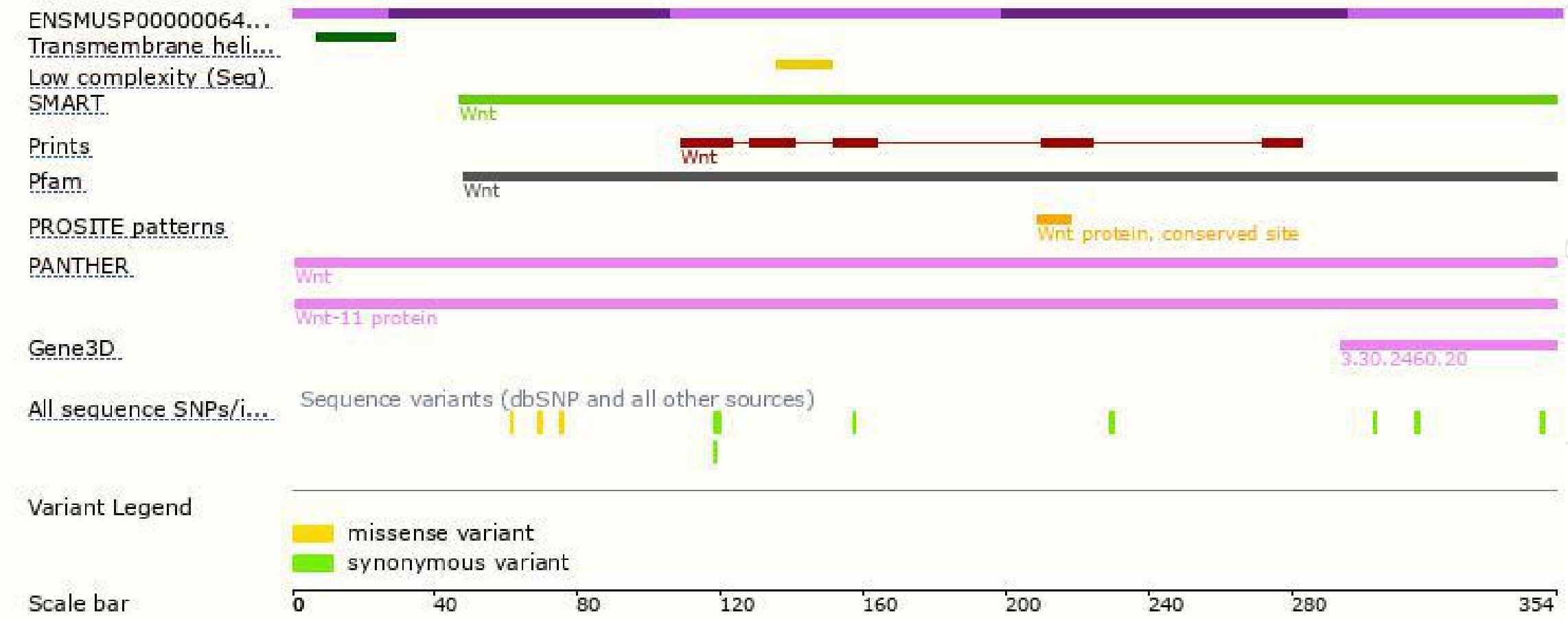
Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Wnt11-201	ENSMUST00000067495.8	3451	354aa	Protein coding	CCDS21475	P48615 Q059Y4	TSL:5 GENCODE basic APPRIS P1
Wnt11-205	ENSMUST00000167303.7	1792	354aa	Protein coding	CCDS21475	P48615 Q059Y4	TSL:1 GENCODE basic APPRIS P1
Wnt11-203	ENSMUST00000165122.7	634	99aa	Protein coding	-	E9Q692	CDS 3' incomplete TSL:3
Wnt11-202	ENSMUST00000163913.7	1844	49aa	Nonsense mediated decay	-	E9PYZ1	TSL:1
Wnt11-204	ENSMUST00000165240.1	1395	154aa	Nonsense mediated decay	-	E9PVI8	TSL:1
Wnt11-206	ENSMUST00000208062.1	745	No protein	lncRNA	-	-	TSL:5

The strategy is based on the design of *Wnt11-201* transcript,The transcription is shown below

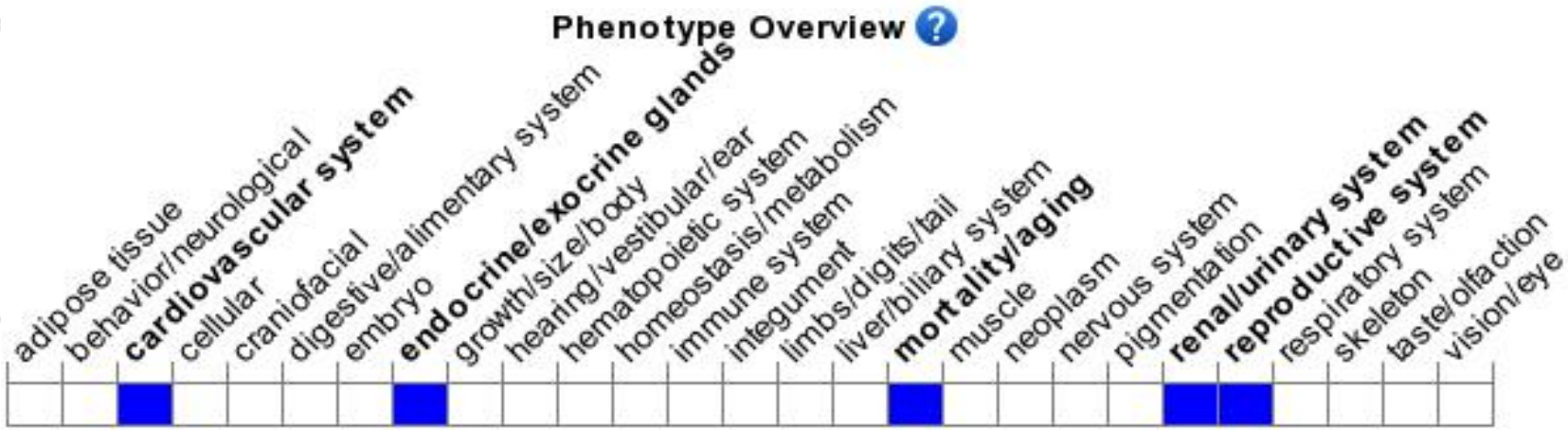
Genomic location distribution



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,Homozygous mutation of this gene results in extensive embryonic lethality and mutants surviving to birth die within the first 2 days of life. The kidneys are small and exhibit delayed development.

集萃药康
GemPharmatech

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

Tel: 400-9660890

集萃药康生物科技
GemPharmatech Co.,Ltd