Vnn1 Cas9-CKO Strategy

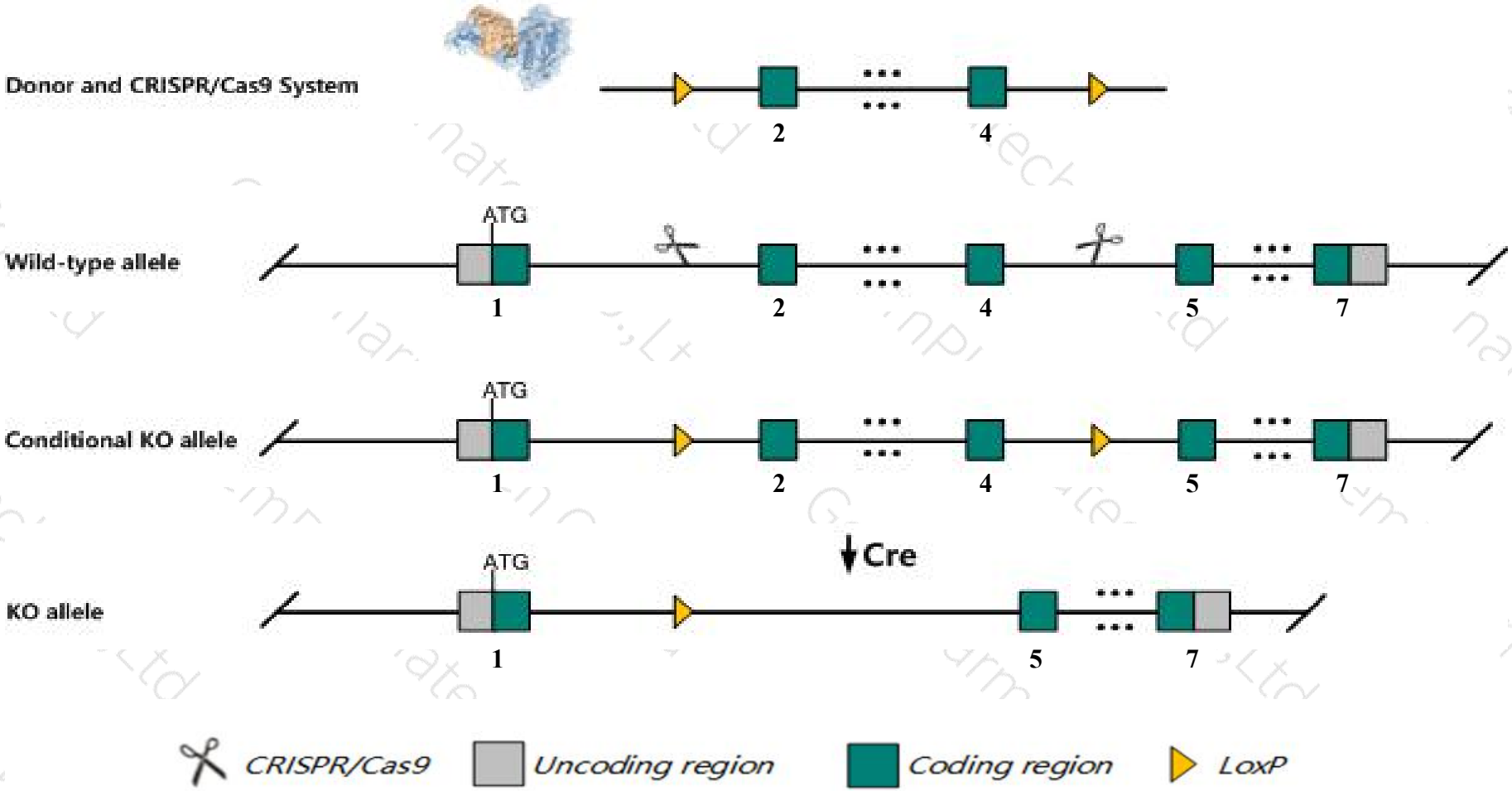
Designer: Yang Zeng
Reviewer: Huimin Su
Design Date: 2019-12-23

Project Overview

Project Name	***Vnn1***
Project type	**Cas9-CKO**
Strain background	**C57BL/6JGpt**

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Vnn1* gene. The schematic diagram is as follows:



Technical routes

- The *Vnn1* gene has 2 transcripts. According to the structure of *Vnn1* gene, exon2-exon4 of *Vnn1-201* (ENSMUST00000041416.7) transcript is recommended as the knockout region.The region contains 616bp coding sequence. Knock out the region will result in disruption of protein function.

- In this project we use CRISPR/Cas9 technology to modify *Vnn1* 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,Mice homozygous for disruptions of this gene develop normally and so no abnormalities in the maturation of lymphoid organs. However, membrane bound pantetheinase is absent in livers and kidneys resuulting in an absence of cysteamine in these organs.

➢ The *Vnn1* gene is located on the Chr10. 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

Vnn1 vanin 1 [*Mus musculus* (house mouse)]

Gene ID: 22361, updated on 26-Nov-2019

Summary

Official Symbol	Vnn1 provided by MGI
Official Full Name	vanin 1 provided by MGI
Primary source	MGI:MGI:108395
See related	Ensembl:ENSMUSG00000037440
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	V-1
Expression	Biased expression in large intestine adult (RPKM 31.3), placenta adult (RPKM 24.5) and 8 other tissues See more
Orthologs	human all

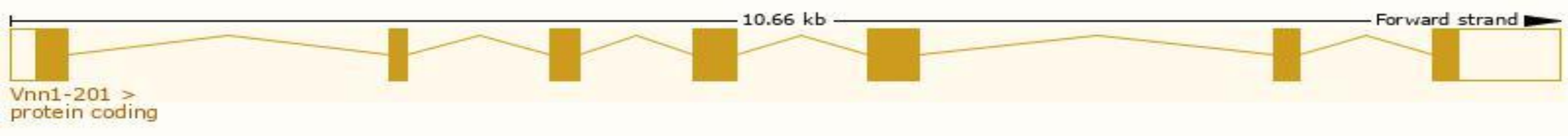
Chromosome 10 - NC_000076.6

Transcript information（Ensembl）

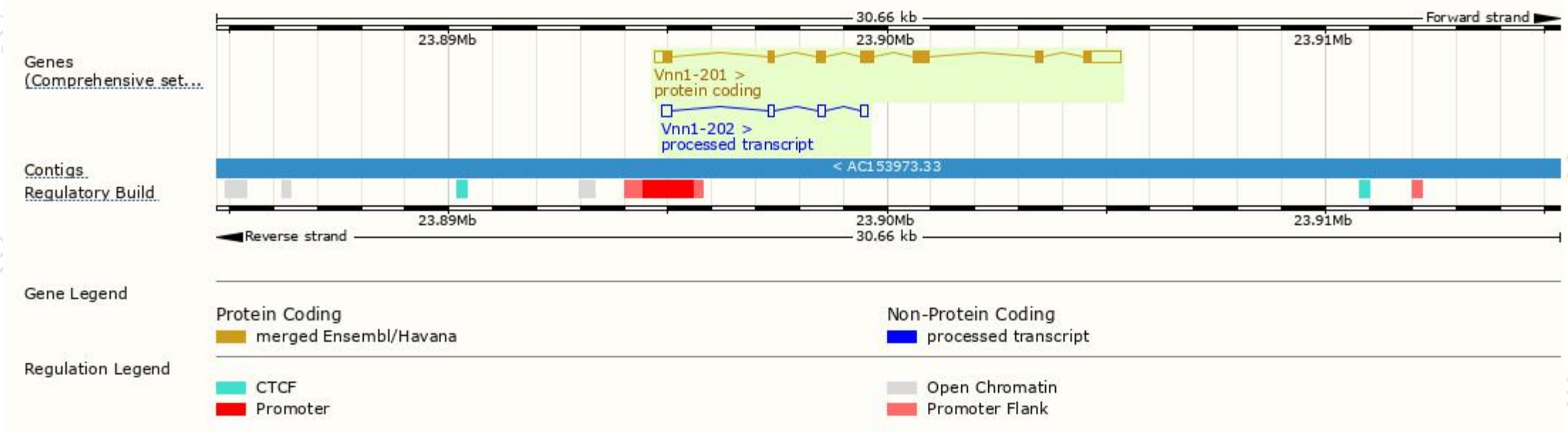
The gene has 2 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Translation ID	Biotype	CCDS	UniProt	Flags
Vnn1-201	ENSMUST00000041416.7	2416	512aa	ENSMUSP00000040599.7	Protein coding	CCDS35868	Q9Z0K8	TSL:1 GENCODE basic APPRIS P1
Vnn1-202	ENSMUST00000219254.1	717	No protein	-	lncRNA	-	-	TSL:3

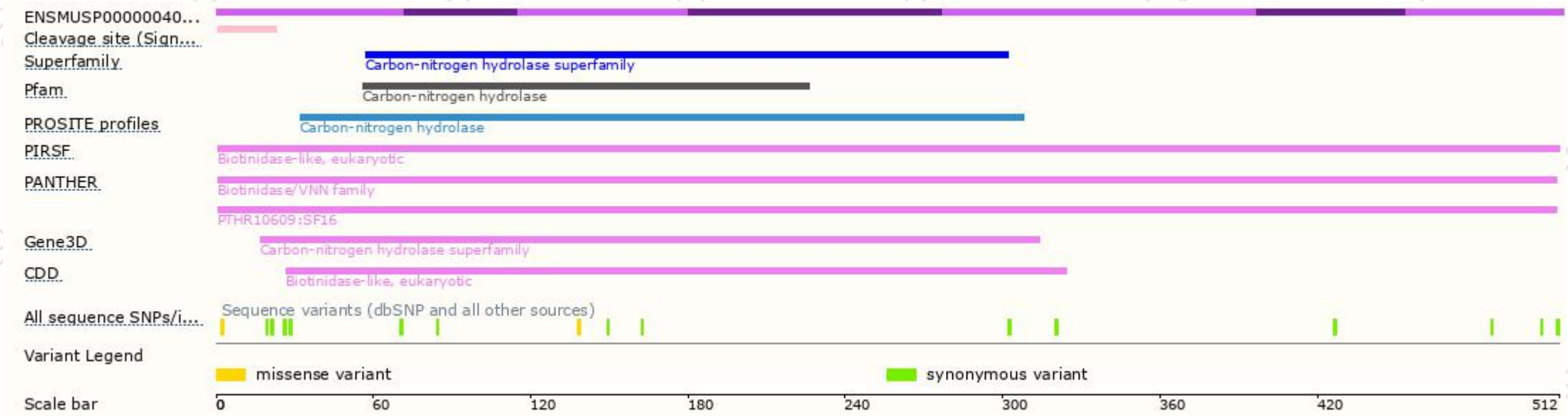
The strategy is based on the design of *Vnn1-201* transcript,The transcription is shown below



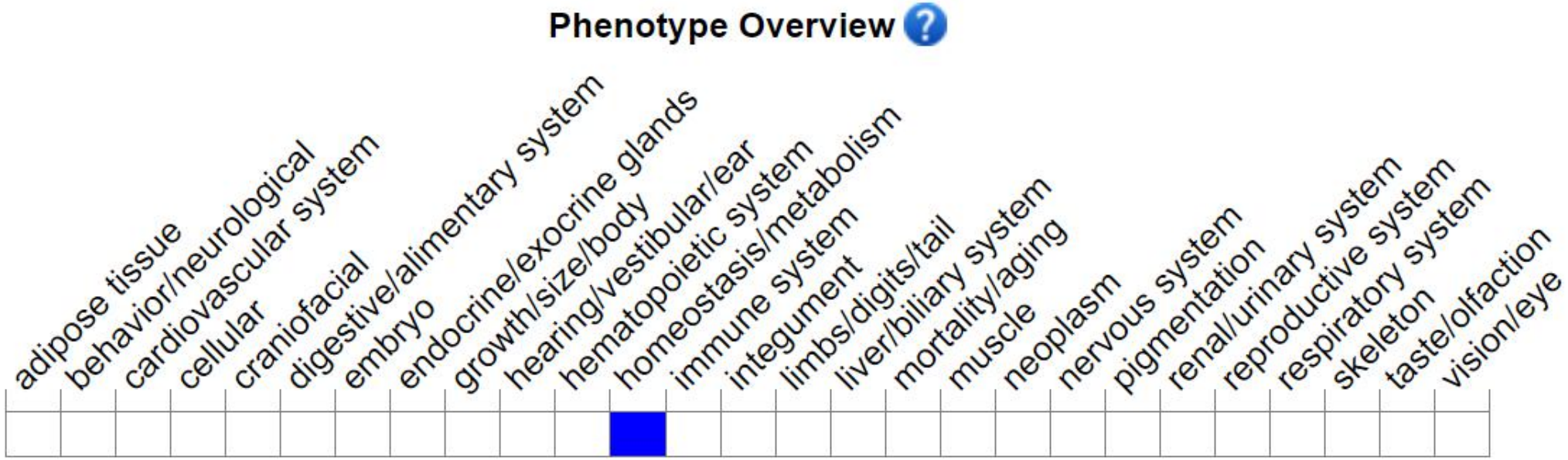
Genomic location distribution



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 disruptions of this gene develop normally and so no abnormalities in the maturation of lymphoid organs. However, membrane bound pantetheinase is absent in livers and kidneys resuulting in an absence of cysteamine in these organs.

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