Abca12 Cas9-CKO Strategy

Designer: JiaYu

Reviewer: Xiaojing Li

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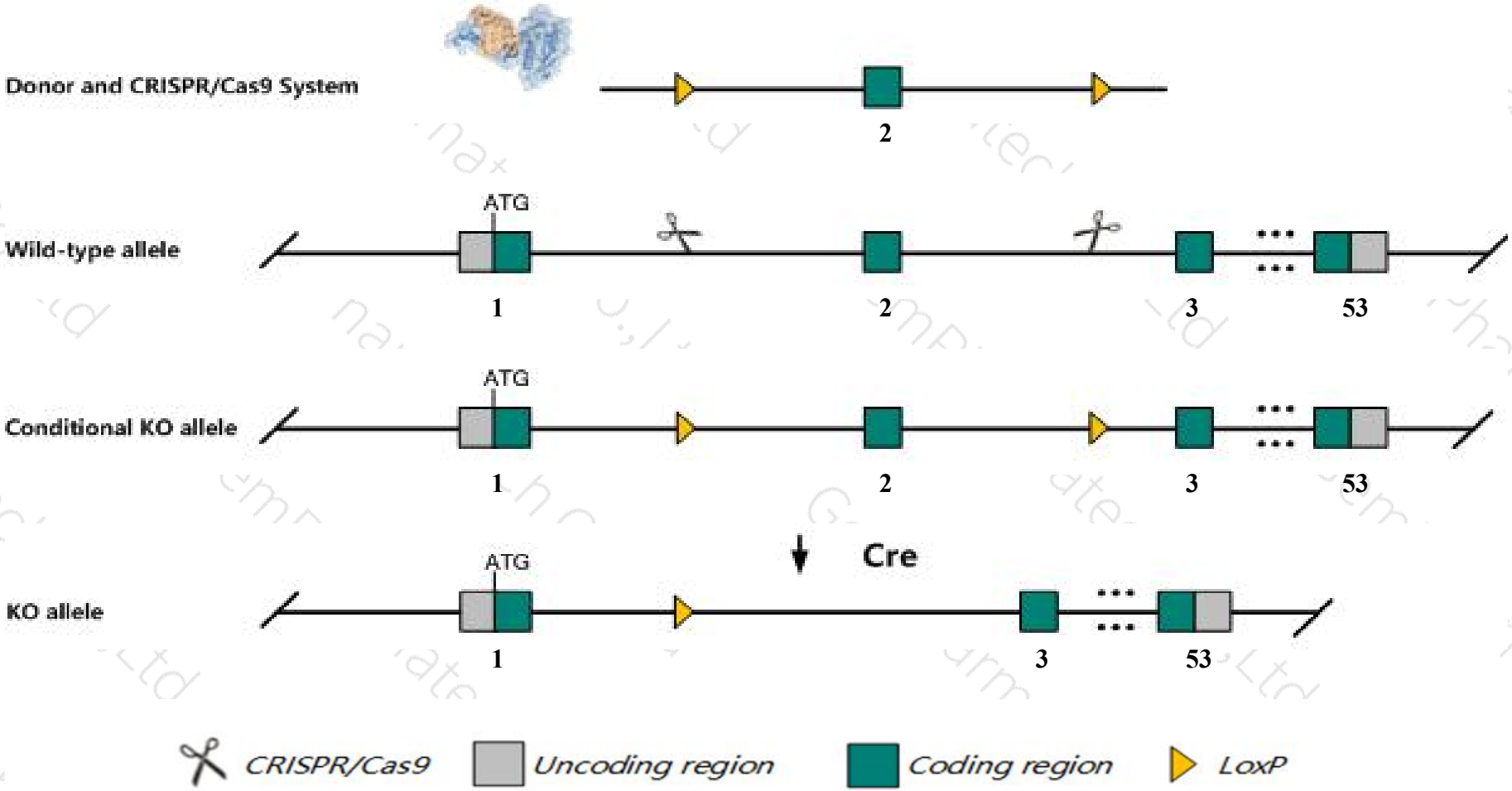
Project Overview

Project Name	***Abca12***
Project type	**Cas9-CKO**
Strain background	**C57BL/6JGpt**

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Abca12* gene. The schematic diagram is as follows:



Technical routes

➢ The *Abca12* gene has 5 transcripts. According to the structure of *Abca12* gene, exon2 of *Abca12-201*(ENSMUST00000087268.6) transcript is recommended as the knockout region.The region contains 94bp coding sequence. Knock out the region will result in disruption of protein function.

➢ In this project we use CRISPR/Cas9 technology to modify *Abca12* 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 a null allele exhibit neonatal lethality associated with defective skin development and abnormal lung morphology.

➢ The *Abca12* gene is located on the Chr1. 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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Abca12 ATP-binding cassette, sub-family A (ABC1), member 12 [Mus musculus (house mouse)]

Gene ID: 74591, updated on 13-Mar-2020

Summary

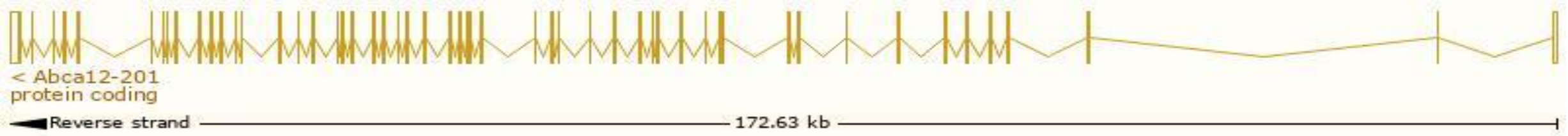
Official Symbol	Abca12 provided by MGI
Official Full Name	ATP-binding cassette, sub-family A (ABC1), member 12 provided byMGI
Primary source	MGI:MGI:2676312
See related	Ensembl:ENSMUSG00000050296
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	4832428G11Rik, 4833417A11Rik
Expression	Low expression observed in reference datasetSee more
Orthologs	human all

Transcript information（Ensembl）

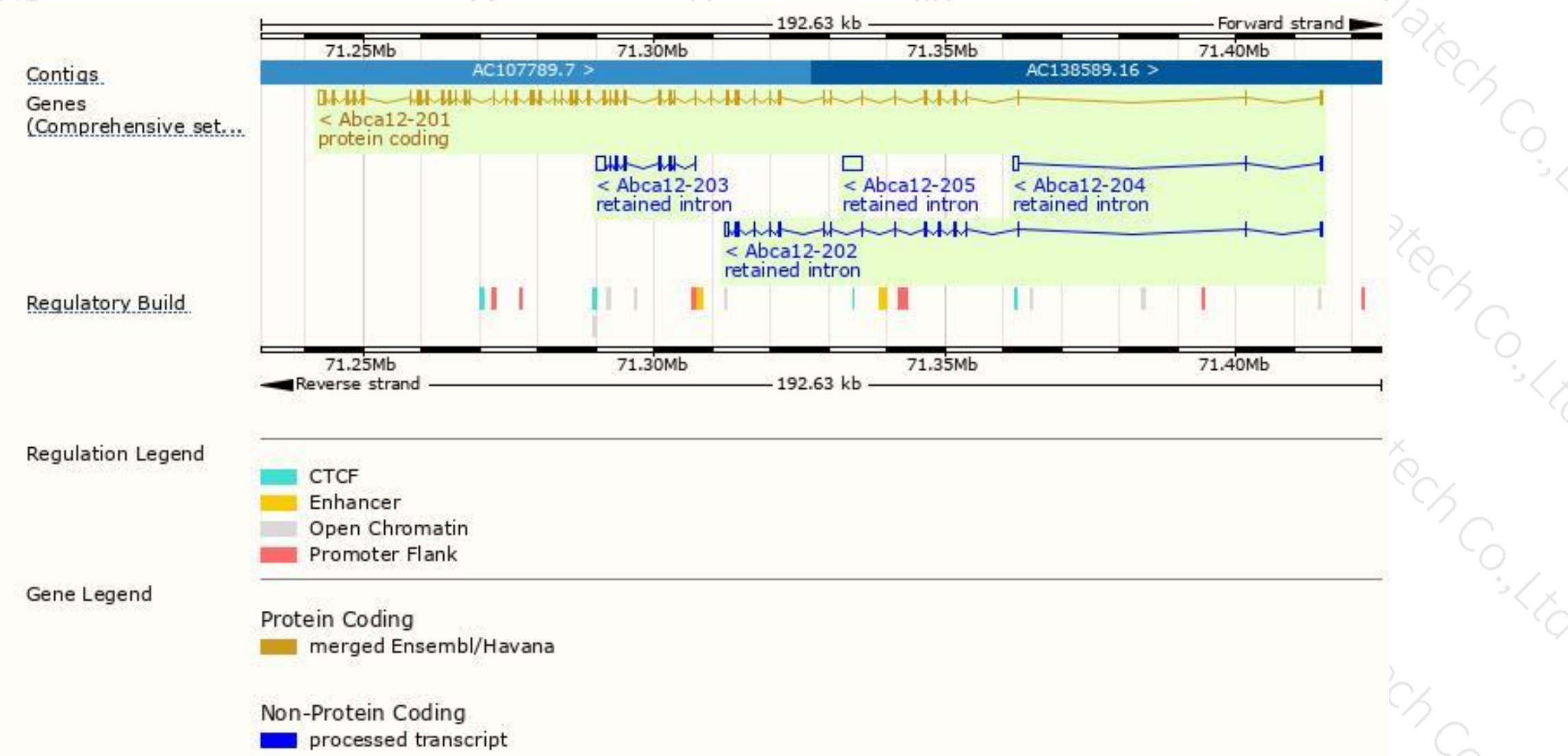
The gene has 5 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Abca12-201	ENSMUST00000087268.6	9137	2595aa	Protein coding	CCDS48286	E9Q876	TSL:1 GENCODE basic APPRIS P1
Abca12-202	ENSMUST00000187097.6	3186	No protein	Retained intron	-	-	TSL:1
Abca12-205	ENSMUST00000191520.1	3169	No protein	Retained intron	-	-	TSL:NA
Abca12-203	ENSMUST00000188752.1	2860	No protein	Retained intron	-	-	TSL:1
Abca12-204	ENSMUST00000189102.1	1489	No protein	Retained intron	-	-	TSL:1

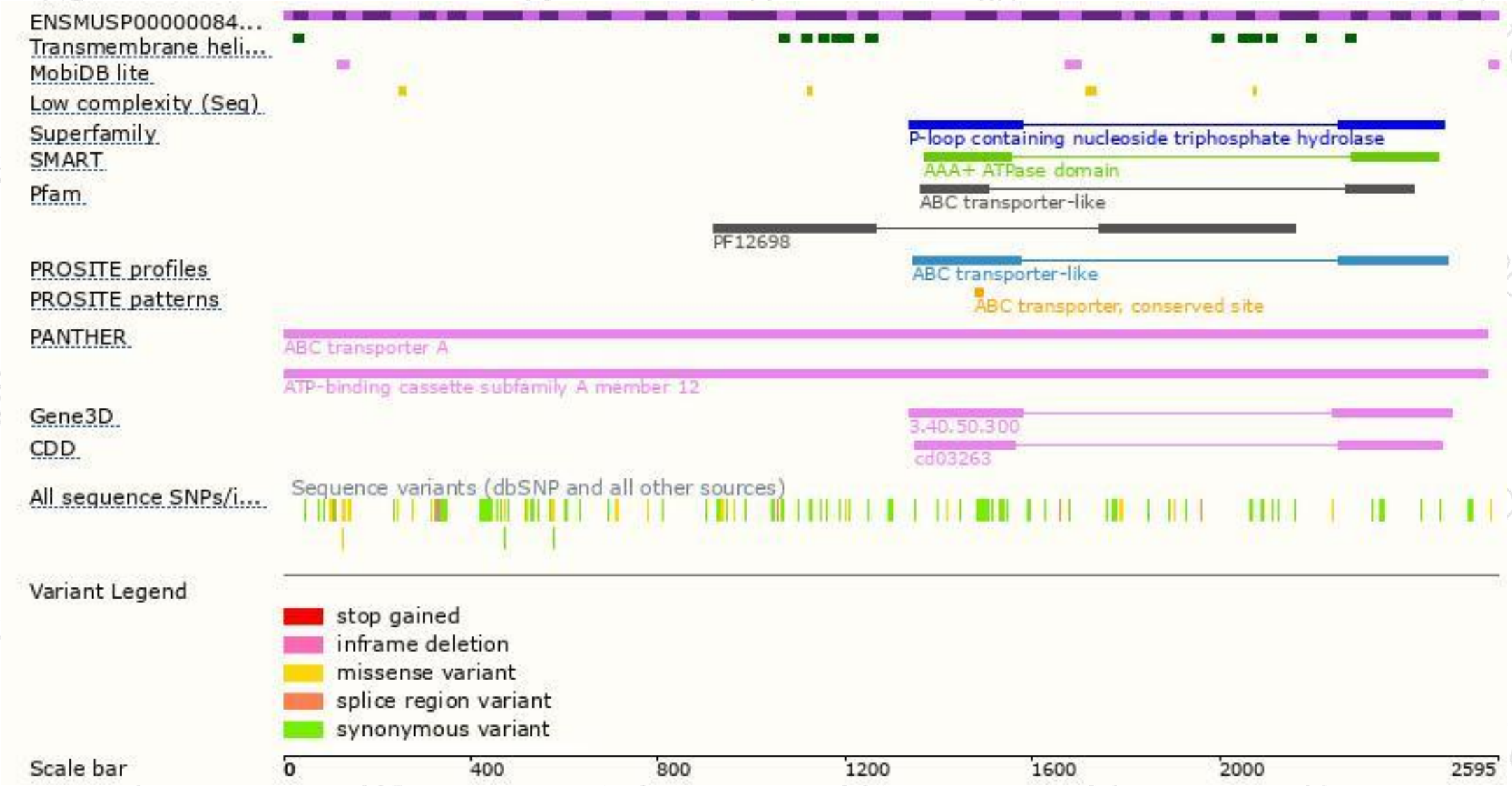
The strategy is based on the design of *Abca12-201* transcript,the transcription is shown below:



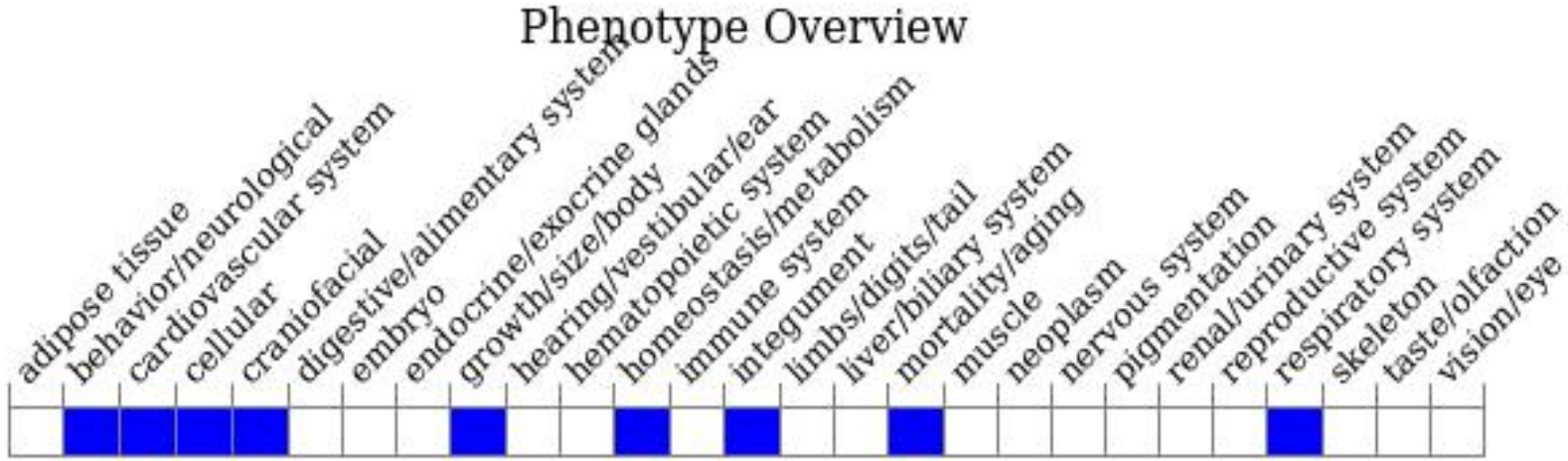
Genomic location distribution



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/).

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

Tel: 400-9660890

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GemPharmatech Co.,Ltd