

Asna1 Cas9-CKO Strategy

Designer: Huimin Su

Reviewer: Ruiuri Zhang

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Project Overview

Project Name

Asna1

Project type

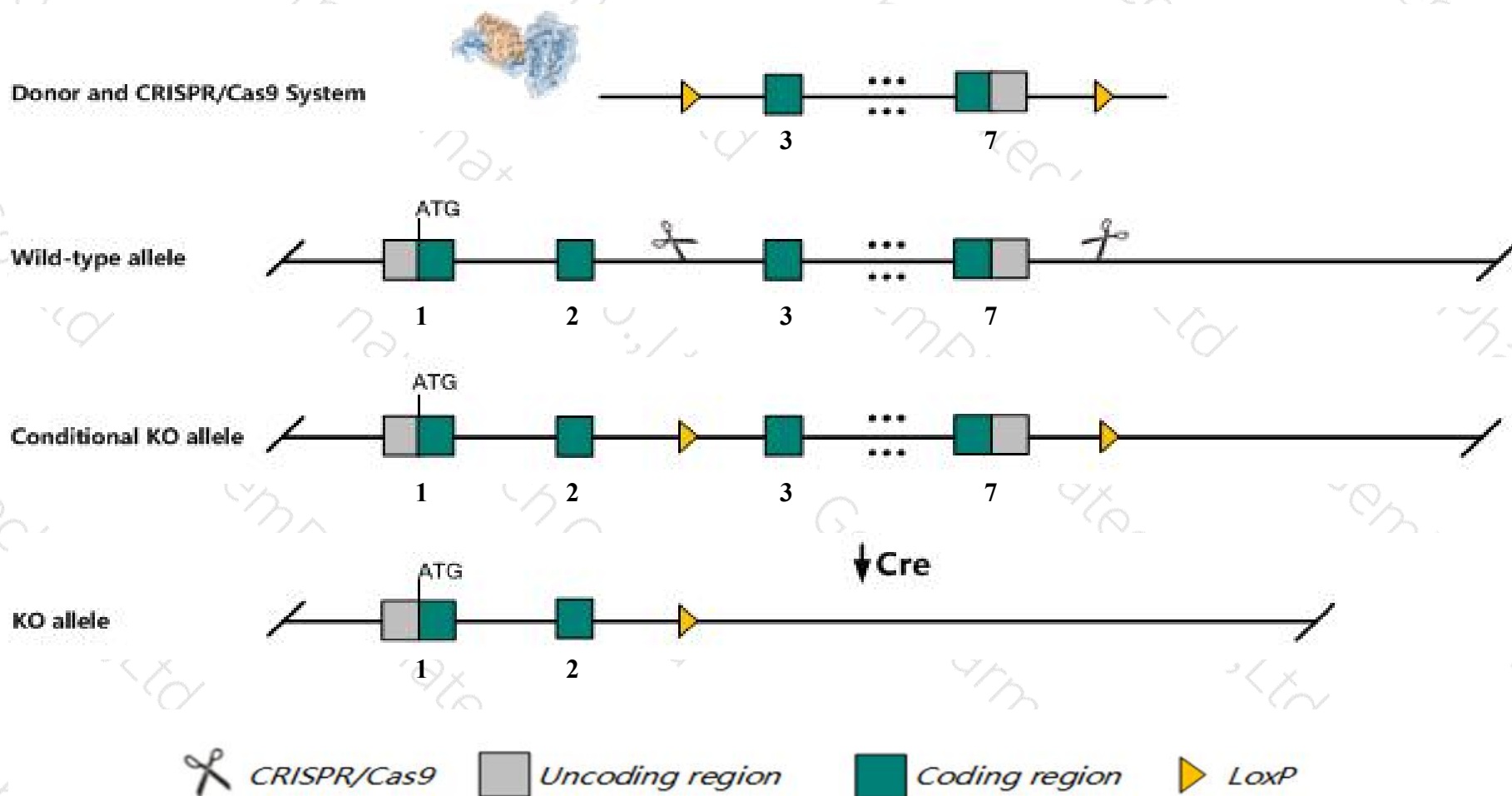
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Asna1* gene. The schematic diagram is as follows:



Technical routes

- The *Asna1* gene has 4 transcripts. According to the structure of *Asna1* gene, exon3-exon7 of *Asna1*-201 (ENSMUST00000064314.9) 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 *Asna1* 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.

- According to the existing MGI data, mice homozygous for a null mutation display early embryonic lethality.
- The *Asna1* gene is located on the Chr8. 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)

Get3 guided entry of tail-anchored proteins factor 3, ATPase [*Mus musculus* (house mouse)]

Gene ID: 56495, updated on 3-May-2020

Summary



Official Symbol	Get3 provided by MGI
Official Full Name	guided entry of tail-anchored proteins factor 3, ATPase provided by MGI
Primary source	MGI:MGI:1928379
See related	Ensembl:ENSMUSG00000052456
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	ArsA; Asna1; 1810048H22Rik
Expression	Ubiquitous expression in kidney adult (RPKM 83.4), testis adult (RPKM 69.8) and 28 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

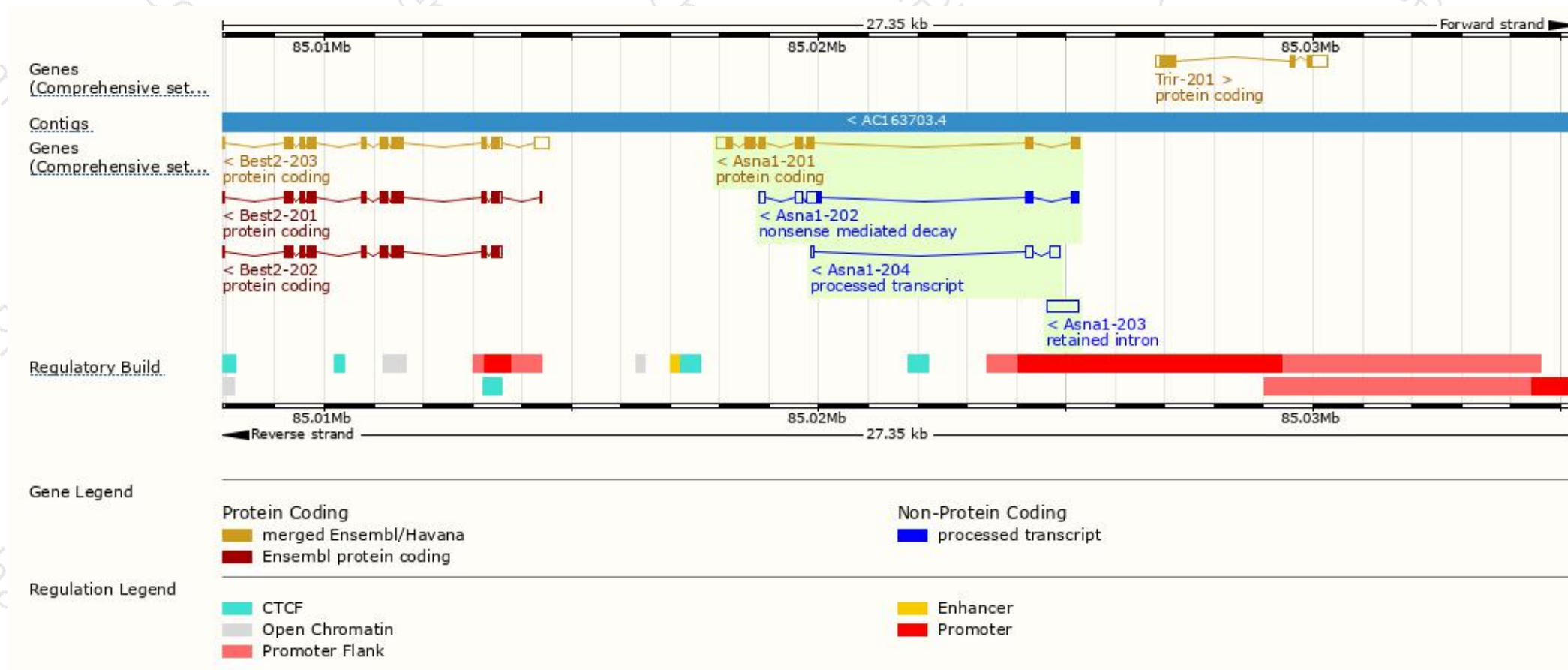
The gene has 4 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Asna1-201	ENSMUST00000064314.9	1256	348aa	Protein coding	CCDS40417	O54984	TSL:1 GENCODE basic APPRIS P1
Asna1-202	ENSMUST00000209834.1	861	131aa	Nonsense mediated decay	-	A0A1B0GRE1	CDS 5' incomplete TSL:3
Asna1-204	ENSMUST00000211702.1	400	No protein	Processed transcript	-	-	TSL:3
Asna1-203	ENSMUST00000211221.1	641	No protein	Retained intron	-	-	TSL:NA

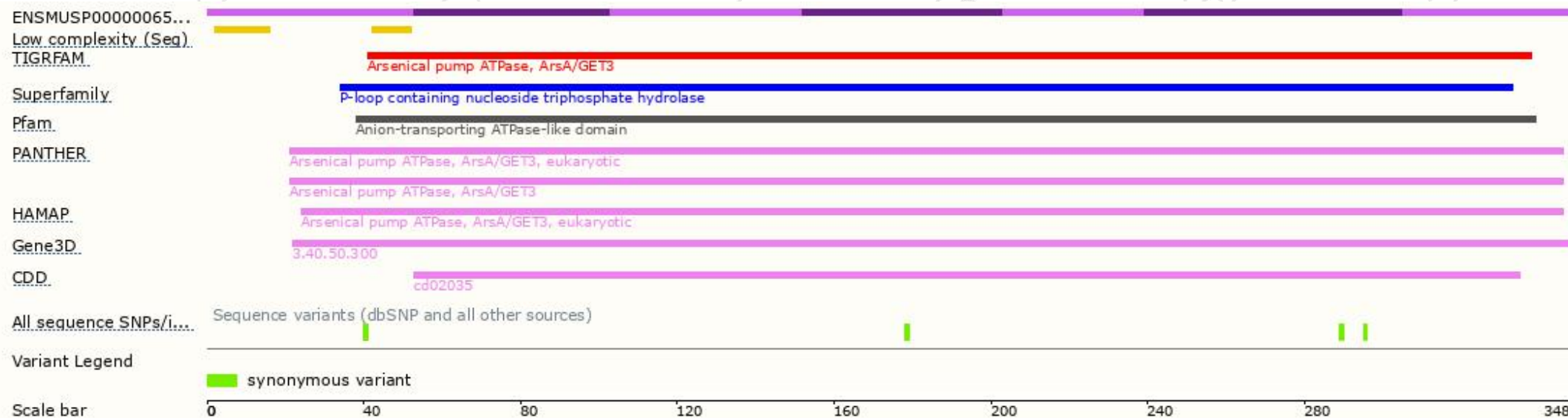
The strategy is based on the design of *Asna1-201* transcript,the transcription is shown below:



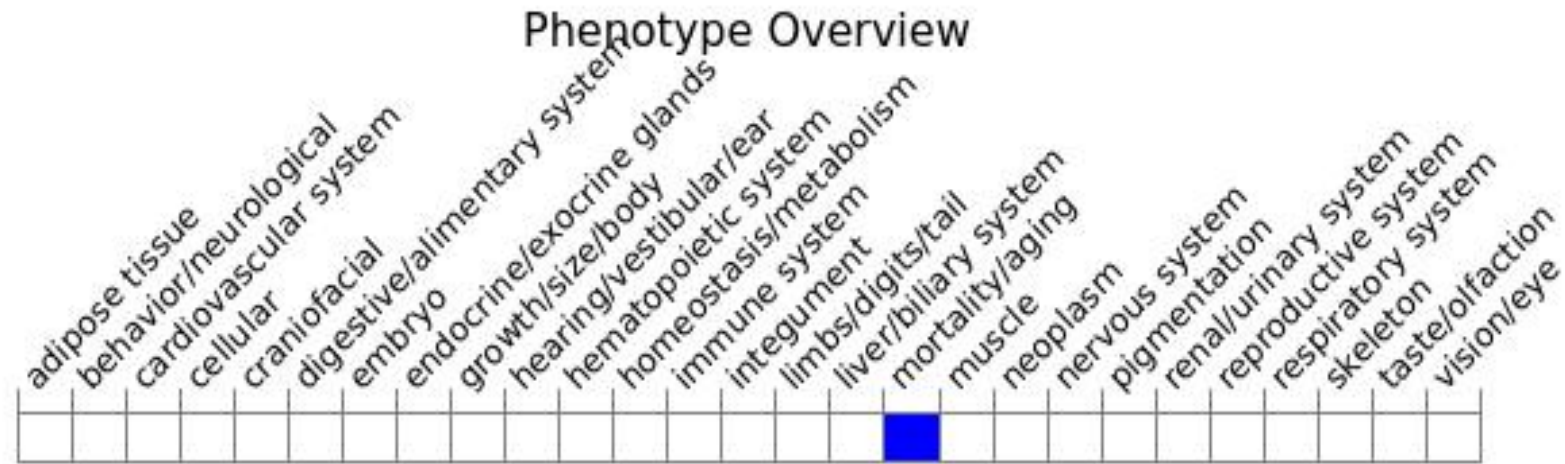
Genomic location distribution



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 mutation display early embryonic lethality.

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

Tel: 400-9660890

