

Thy1 Cas9-KO Strategy

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Design Date: 2020-6-22

Project Overview

Project Name

Thy1

Project type

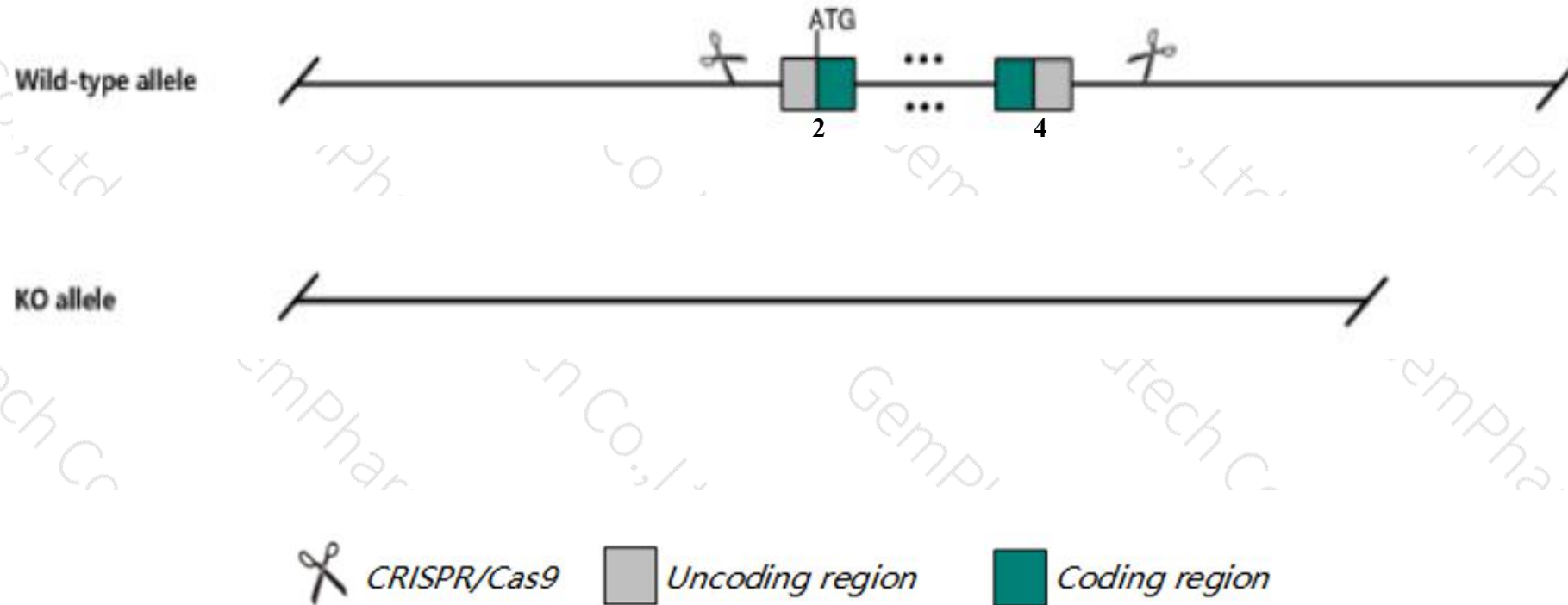
Cas9-KO

Strain background

C57BL/6JGpt

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Thy1* gene. The schematic diagram is as follows:



- The *Thy1* gene has 6 transcripts. According to the structure of *Thy1* gene, exon2-exon4 of *Thy1-201*(ENSMUST00000114840.1) transcript is recommended as the knockout region. The region contains all 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 *Thy1* gene. The brief process is as follows: CRISPR/Cas9 system 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.

- According to the existing MGI data, homozygous null mice are viable, fertile, and display no abnormalities in the brain and spinal cord, have normal axonal development and regeneration and no behavioral abnormalities. Long term potentiation is inhibited in the dentate gyrus.
- The *Thy1* gene is located on the Chr9. 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)

Thy1 thymus cell antigen 1, theta [Mus musculus (house mouse)]

Gene ID: 21838, updated on 13-Mar-2020

Summary



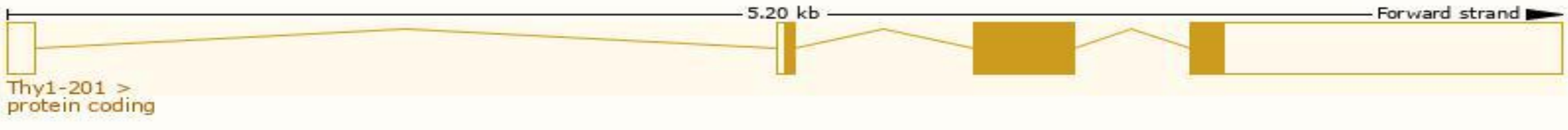
Official Symbol	Thy1 provided by MGI
Official Full Name	thymus cell antigen 1, theta provided by MGI
Primary source	MGI:MGI:98747
See related	Ensembl:ENSMUSG00000032011
Gene type	protein coding
RefSeq status	REVIEWED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	CD90, T25, Thy-1, Thy-1.2, Thy1.1, Thy1.2
Summary	This gene encodes a glycoprotein that is anchored to the cell surface of thymocytes, neuronal and other cells through a glycosyl-phosphatidylinositol moiety. A soluble form of the encoded protein has also been detected in serum and cerebrospinal fluid. The encoded protein undergoes further processing to generate the mature protein which mediates cell-cell interactions to trigger downstream signaling pathways. [provided by RefSeq, Jul 2015]
Expression	Biased expression in thymus adult (RPKM 668.7), cortex adult (RPKM 206.5) and 6 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

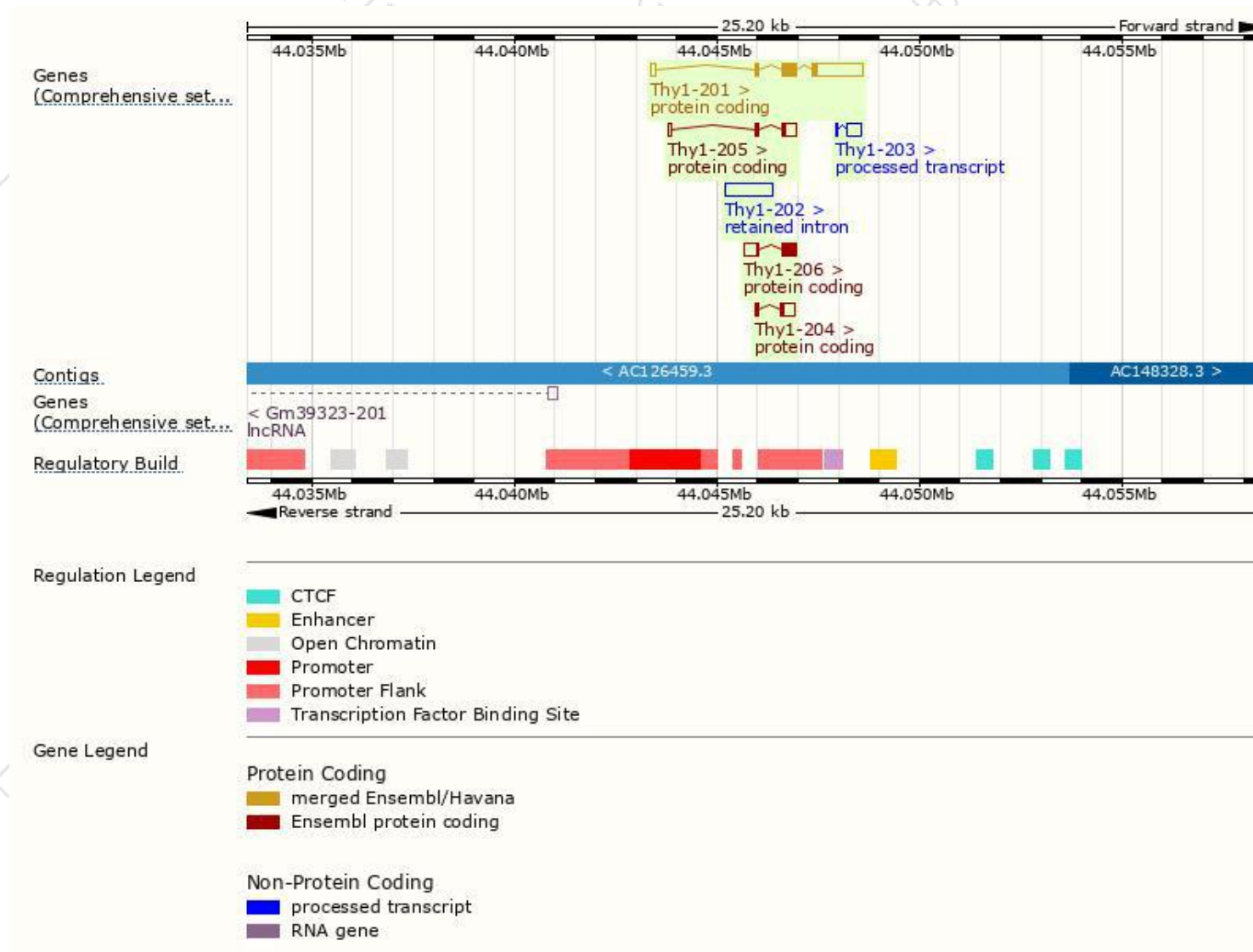
The gene has 6 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Thy1-201	ENSMUST00000114840.1	1735	162aa	Protein coding	CCDS23093	P01831	TSL:2 GENCODE basic APPRIS P1
Thy1-206	ENSMUST00000215809.1	685	125aa	Protein coding	-	A0A1L1SUX8	CDS 3' incomplete TSL:2
Thy1-205	ENSMUST00000215156.1	460	37aa	Protein coding	-	A0A1L1ST40	TSL:5 GENCODE basic
Thy1-204	ENSMUST00000214627.1	446	40aa	Protein coding	-	A0A1L1SR57	TSL:3 GENCODE basic
Thy1-203	ENSMUST00000213733.1	449	No protein	Processed transcript	-	-	TSL:3
Thy1-202	ENSMUST00000213632.1	1192	No protein	Retained intron	-	-	TSL:NA

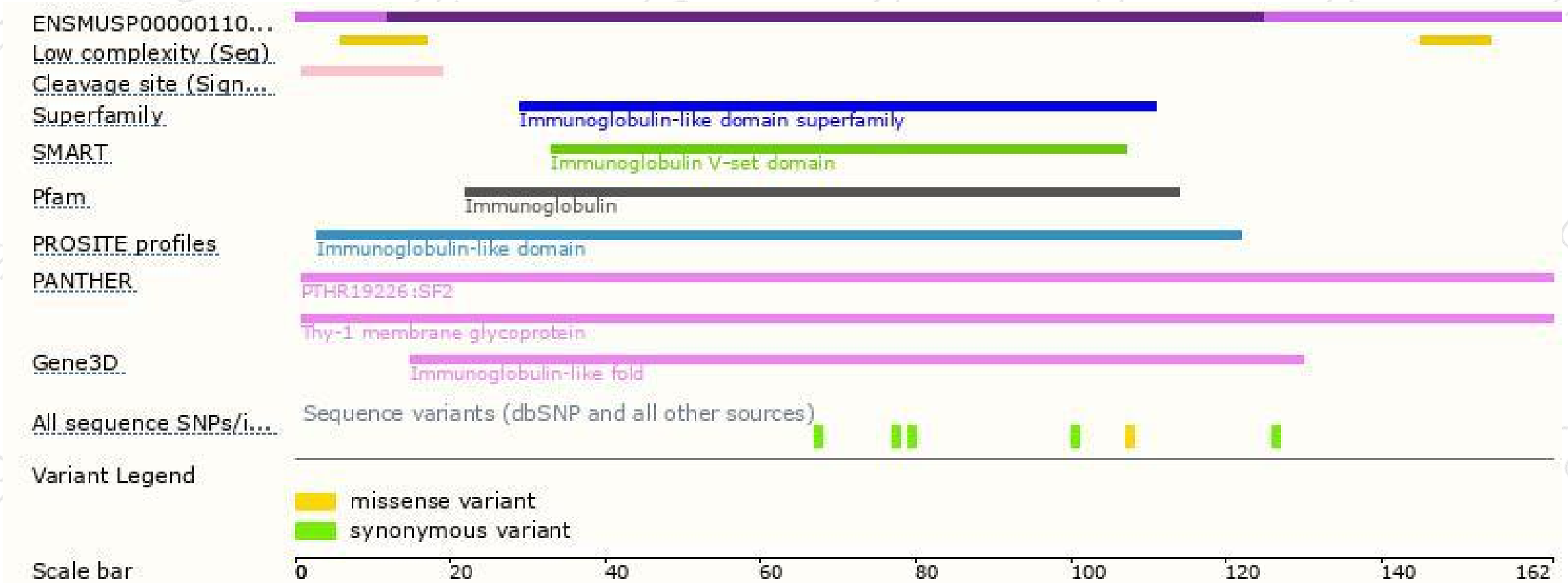
The strategy is based on the design of *Thy1-201* transcript,the transcription is shown below:



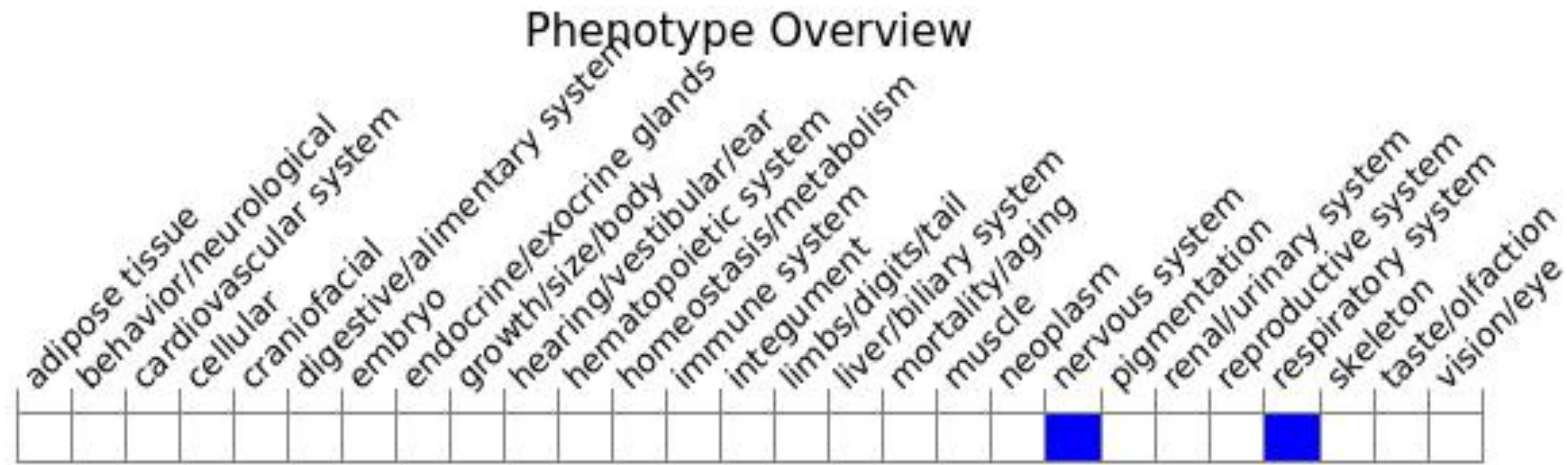
Genomic location distribution



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 null mice are viable, fertile, and display no abnormalities in the brain and spinal cord, have normal axonal development and regeneration and no behavioral abnormalities. Long term potentiation is inhibited in the dentate gyrus.

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

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