

Mtx3 Cas9-CKO Strategy

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Project Overview

Project Name

Mtx3

Project type

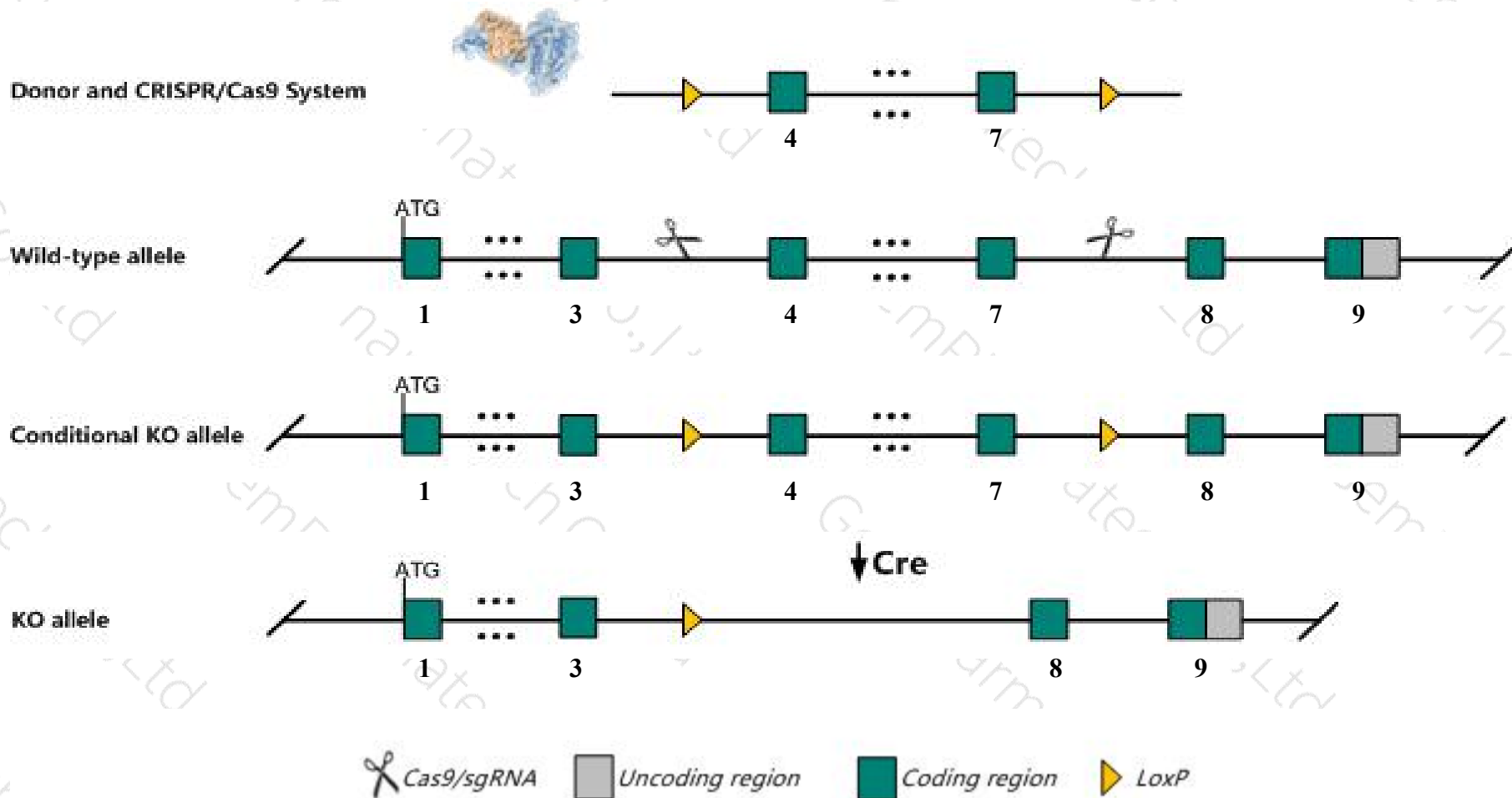
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Mtx3* gene. The schematic diagram is as follows:



- The *Mtx3* gene has 3 transcripts. According to the structure of *Mtx3* gene, exon4-exon7 of *Mtx3-201*(ENSMUST00000076169.3) transcript is recommended as the knockout region. The region contains 511bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Mtx3* gene. The brief process is as follows: sgRNA was transcribed in vitro, donor vector was constructed. Cas9, sgRNA 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 was 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.

- The *Mtx3* gene is located on the Chr13. 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)

Mtx3 metaxin 3 [*Mus musculus* (house mouse)]

Gene ID: 382793, updated on 25-Sep-2020

Summary

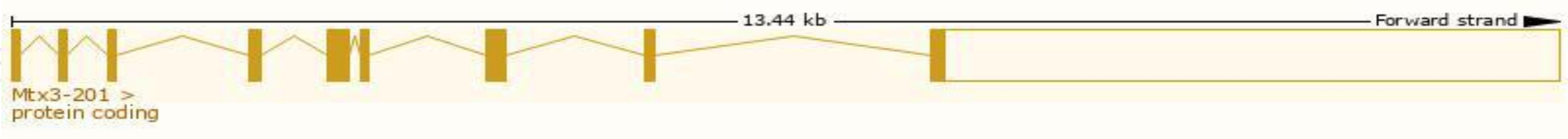
Official Symbol	Mtx3 provided by MGI
Official Full Name	metaxin 3 provided by MGI
Primary source	MGI:MGI:2686040
See related	Ensembl:ENSMUSG000000021704
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	Gm1194; Gm6514; AA409304; AI853833; AU067765; EG624619; 4930470O13Rik
Expression	Ubiquitous expression in limb E14.5 (RPKM 7.2), cerebellum adult (RPKM 6.6) and 27 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

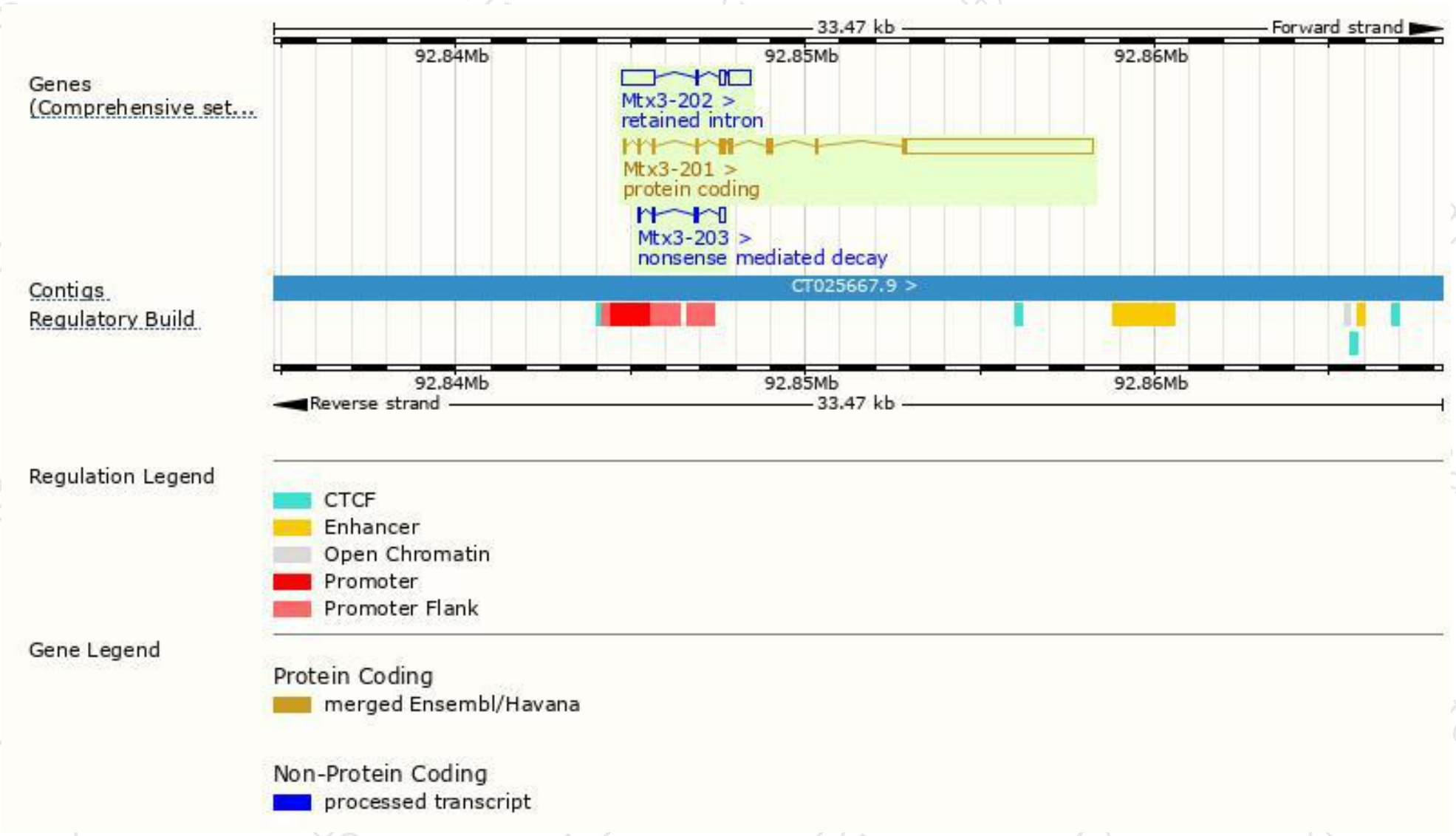
The gene has 3 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Mtx3-201	ENSMUST00000076169.3	6275	312aa	Protein coding	CCDS49328	D3YTP3	TSL:5 GENCODE basic APPRIS P1
Mtx3-203	ENSMUST00000224368.1	435	68aa	Nonsense mediated decay	-	A0A286YDW3	CDS 5' incomplete
Mtx3-202	ENSMUST00000223719.1	1810	No protein	Retained intron	-	-	

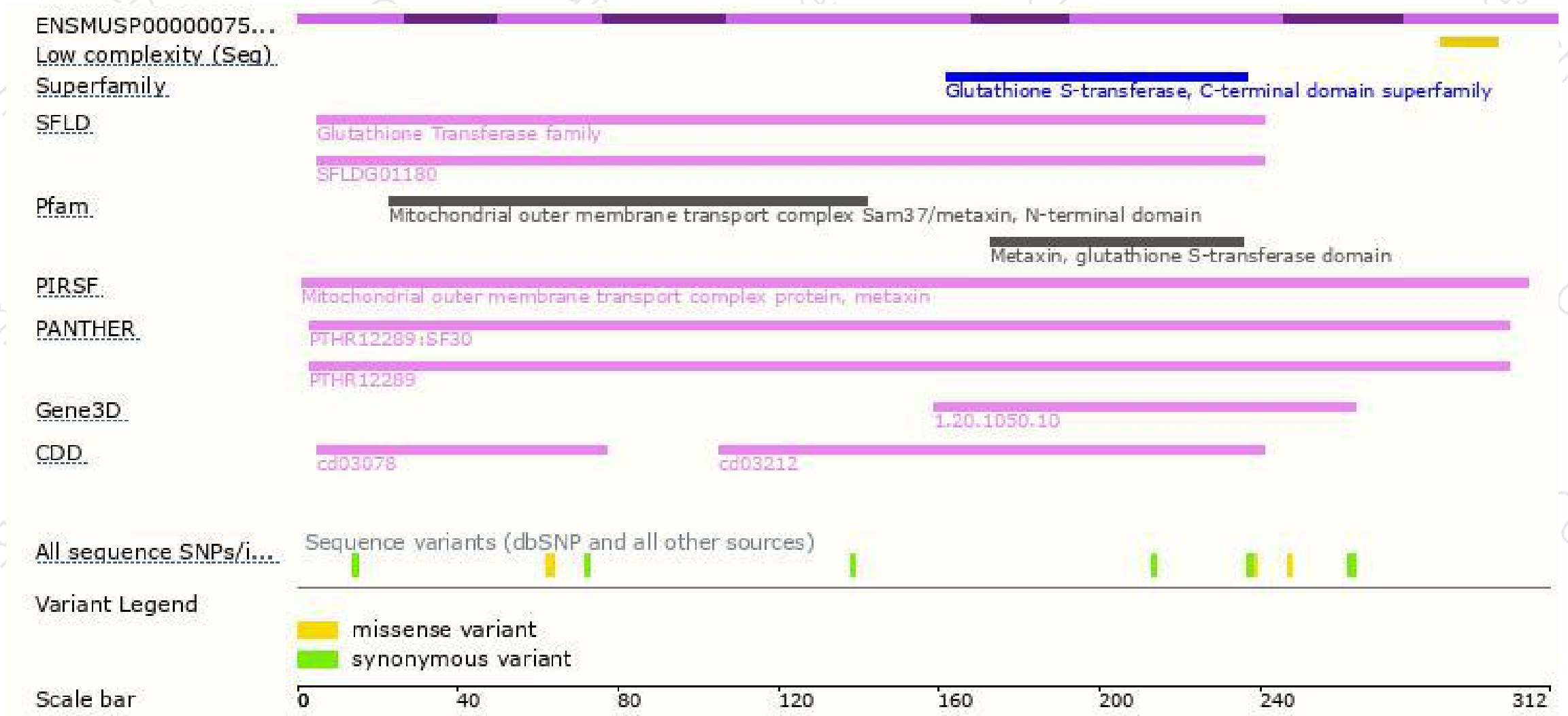
The strategy is based on the design of *Mtx3-201* transcript,the transcription is shown below:



Genomic location distribution



Protein domain



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

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