Tmx4 Cas9-CKO Strategy

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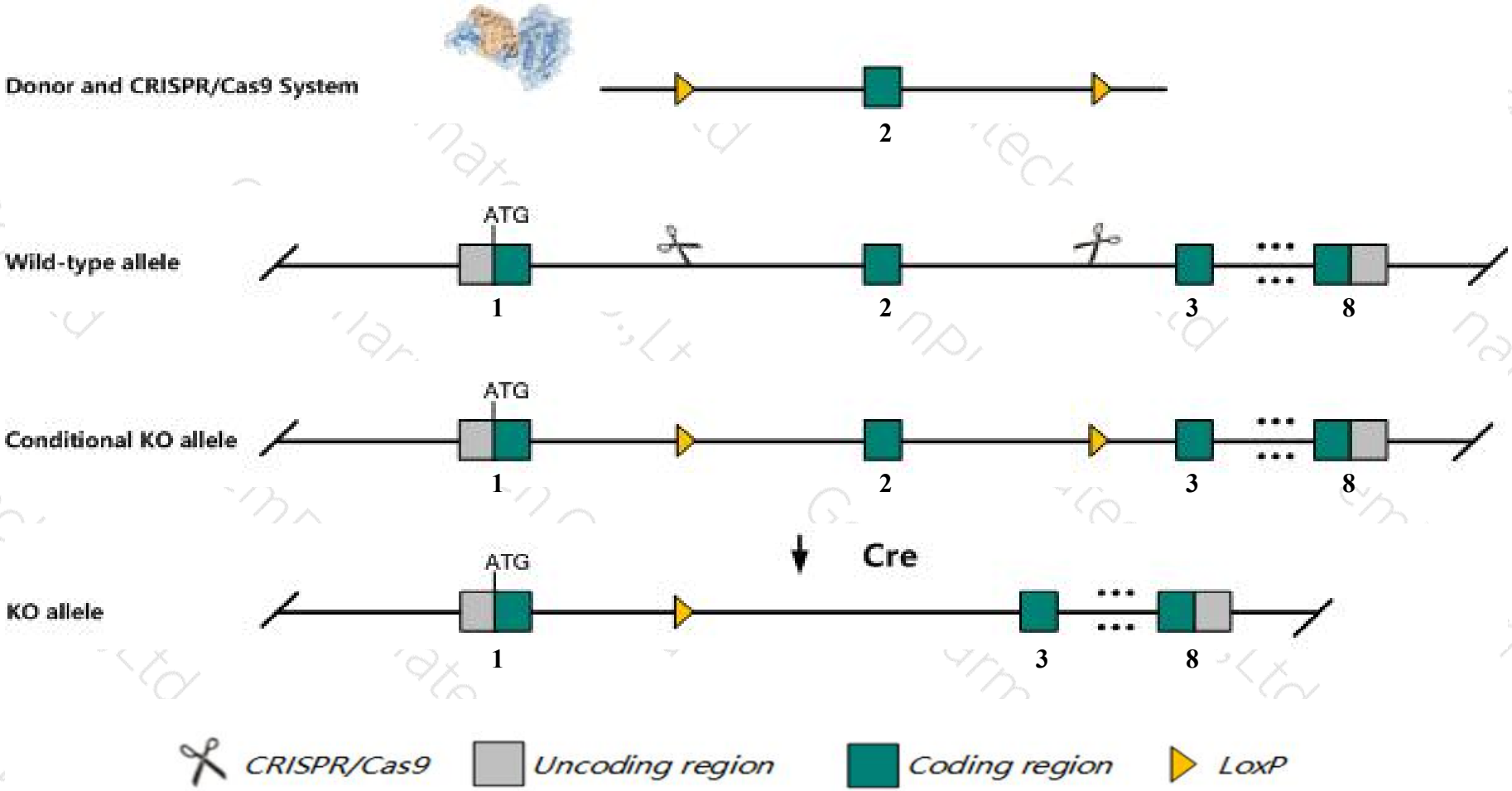
Project Overview

Project Name	***Tmx4***
Project type	**Cas9-CKO**
Strain background	**C57BL/6JGpt**

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Tmx4* gene. The schematic diagram is as follows:



Technical routes

- The *Tmx4* gene has 4 transcripts. According to the structure of *Tmx4* gene, exon2 of *Tmx4-201* (ENSMUST00000038228.10) transcript is recommended as the knockout region.The region contains 116bp coding sequence. Knock out the region will result in disruption of protein function.

- In this project we use CRISPR/Cas9 technology to modify *Tmx4* 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

➢ The *Tmx4* gene is located on the Chr2. 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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Tmx4 thioredoxin-related transmembrane protein 4 [*Mus musculus* (house mouse)]

Gene ID: 52837, updated on 10-Oct-2019

Summary

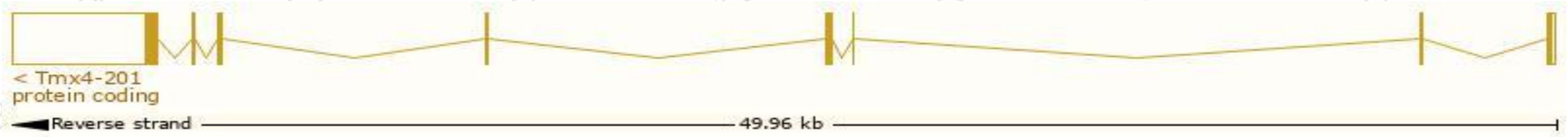
Official Symbol	Tmx4 provided by MGI
Official Full Name	thioredoxin-related transmembrane protein 4 provided by MGI
Primary source	MGI:MGI:106558
See related	Ensembl:ENSMUSG00000034723
Gene type	protein coding
RefSeq status	PROVISIONAL
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	Txndc13; AI843224; AW046784; mKIAA1162; D2Bwg1356e; 2810417D04Rik; 4930500L08Rik
Expression	Broad expression in frontal lobe adult (RPKM 23.2), cerebellum adult (RPKM 18.6) and 21 other tissues See more
Orthologs	human all

Transcript information（Ensembl）

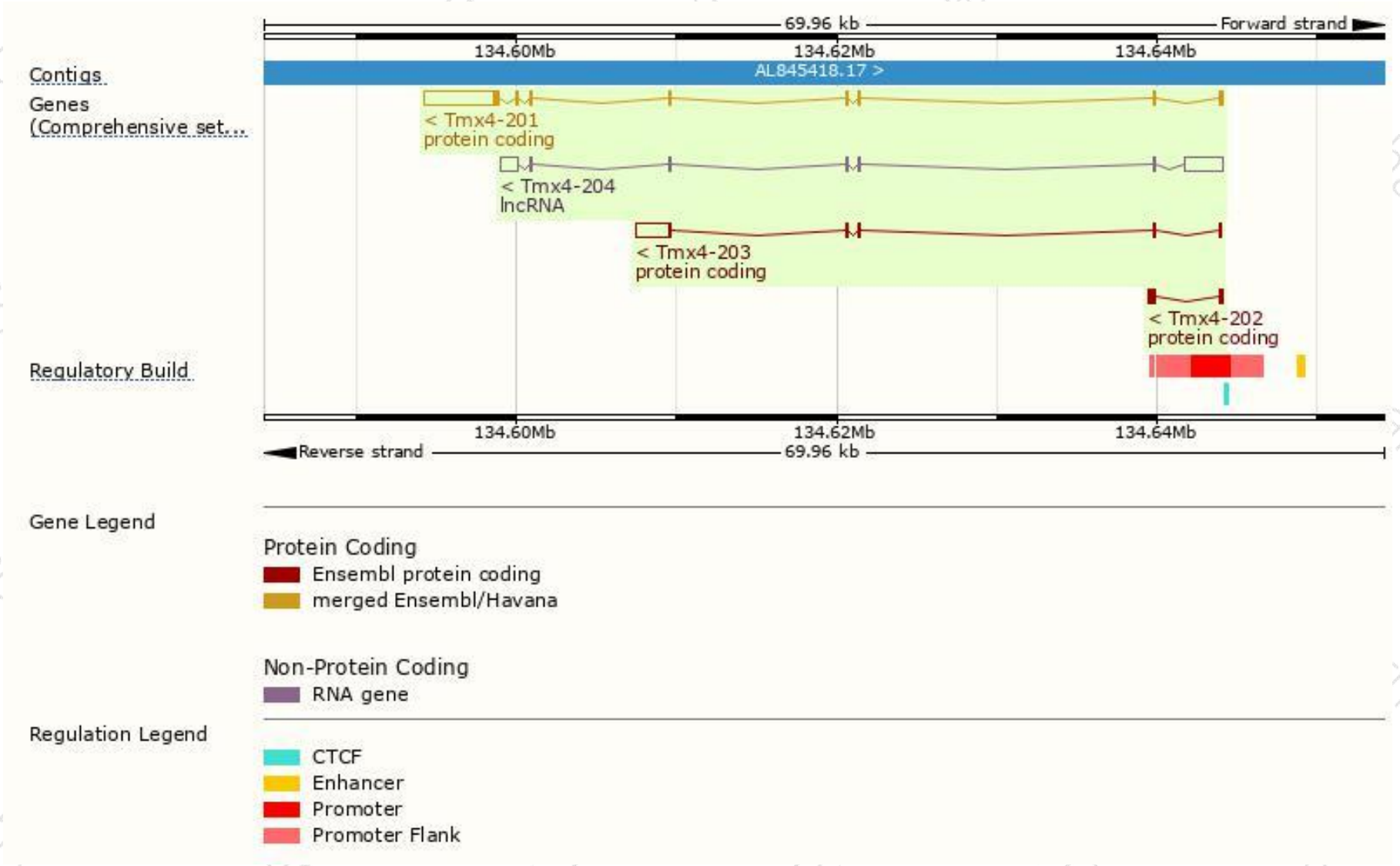
The gene has 4 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Tmx4-201	ENSMUST00000038228.10	5488	335aa	Protein coding	CCDS16784	Q0P5W2 Q8C0L0	TSL:1 GENCODE basic APPRIS P2
Tmx4-203	ENSMUST00000110120.1	2602	183aa	Protein coding	-	A2ARI0	TSL:1 GENCODE basic APPRIS ALT2
Tmx4-202	ENSMUST00000110119.1	596	166aa	Protein coding	-	A2ARI1	TSL:2 GENCODE basic
Tmx4-204	ENSMUST00000137377.1	3917	No protein	lncRNA	-	-	TSL:1

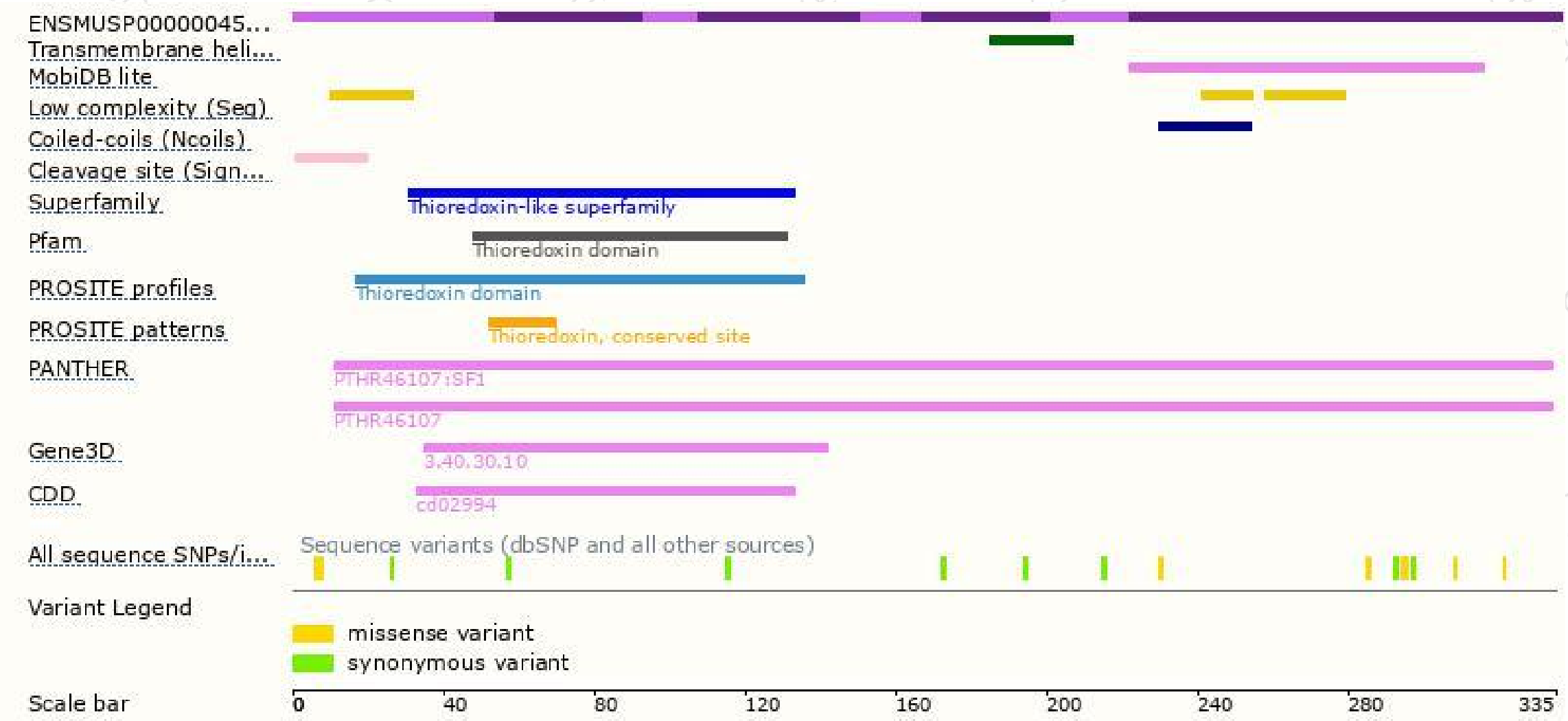
The strategy is based on the design of *Tmx4-201* transcript,The transcription is shown below



Genomic location distribution



Protein domain



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

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