Tgm3 Cas9-CKO Strategy

Designer: Xiaojing Li
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Reviewer: JiaYu

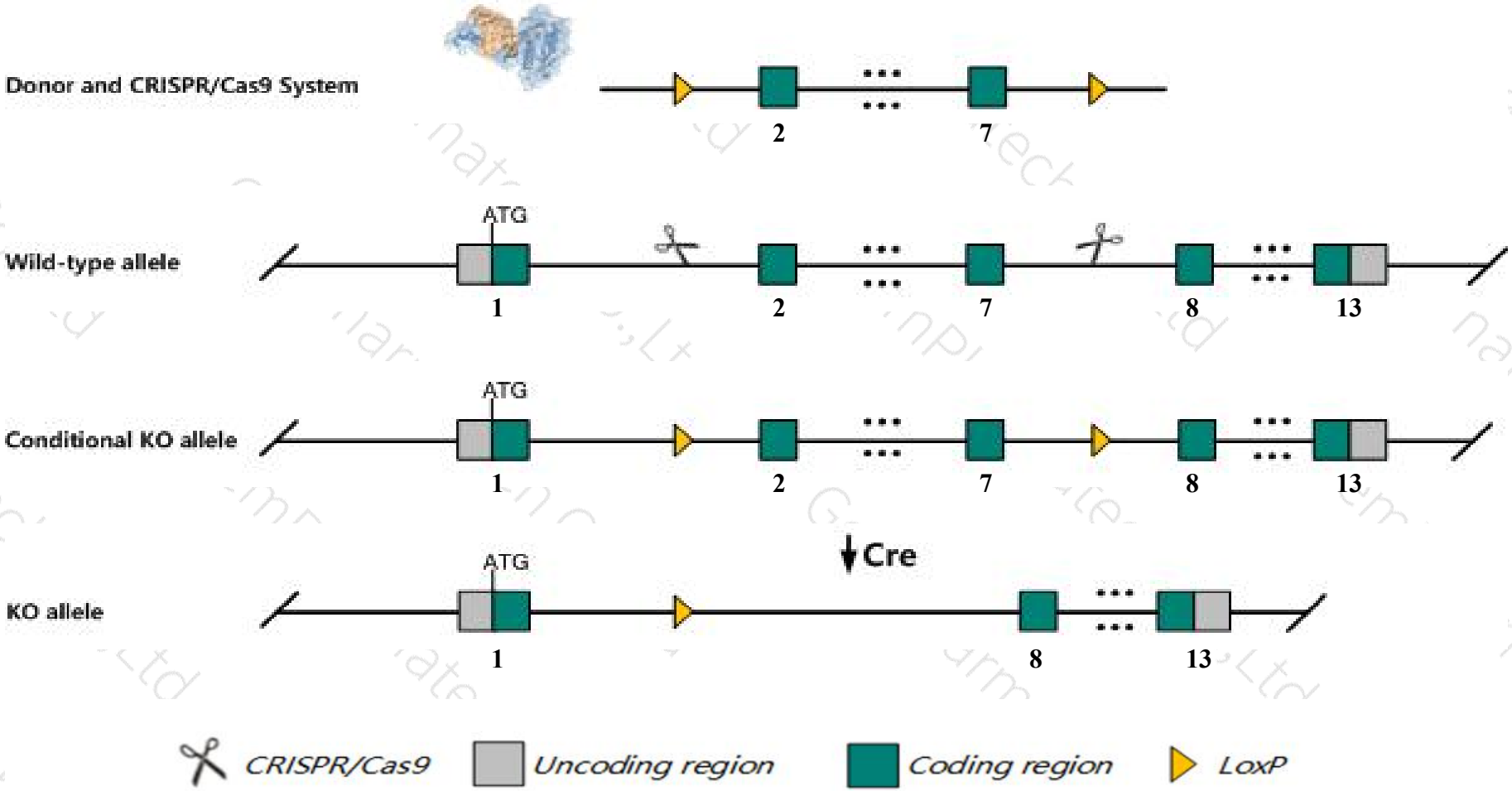
集萃药康 GemPharmatech
GemPharmatech Co.,Ltd

Project Overview

Project Name	***Tgm3***
Project type	**Cas9-CKO**
Strain background	**C57BL/6JGpt**

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Tgm3* gene. The schematic diagram is as follows:



Technical routes

- The *Tgm3* gene has 1 transcript. According to the structure of *Tgm3* gene, exon2-exon7 of *Tgm3-201* (ENSMUST00000110299.2) transcript is recommended as the knockout region.The region contains 976bp coding sequence. Knock out the region will result in disruption of protein function.

- In this project we use CRISPR/Cas9 technology to modify *Tgm3* 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 an ENU or null mutation exhibit rough-looking, curly hair. Null mutants display delayed skin barrier formation, loss of vibrissae, and brittle hairs.

➢ The *Tgm3* 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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Tgm3 transglutaminase 3, E polypeptide [*Mus musculus* (house mouse)]

Gene ID: 21818, updated on 21-Aug-2019

Summary

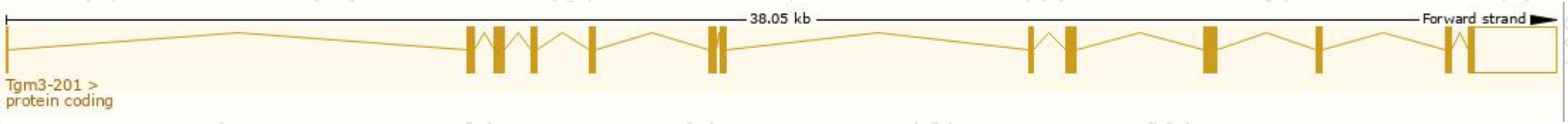
Official Symbol	Tgm3 provided by MGI
Official Full Name	transglutaminase 3, E polypeptide provided by MGI
Primary source	MGI:MGI:98732
See related	Ensembl:ENSMUSG00000027401
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	we; TGE; TG E; TG(E); TGase E; TGase-3; AI893889
Expression	Biased expression in colon adult (RPKM 142.1), lung adult (RPKM 18.2) and 1 other tissue See more
Orthologs	human all

Transcript information（Ensembl）

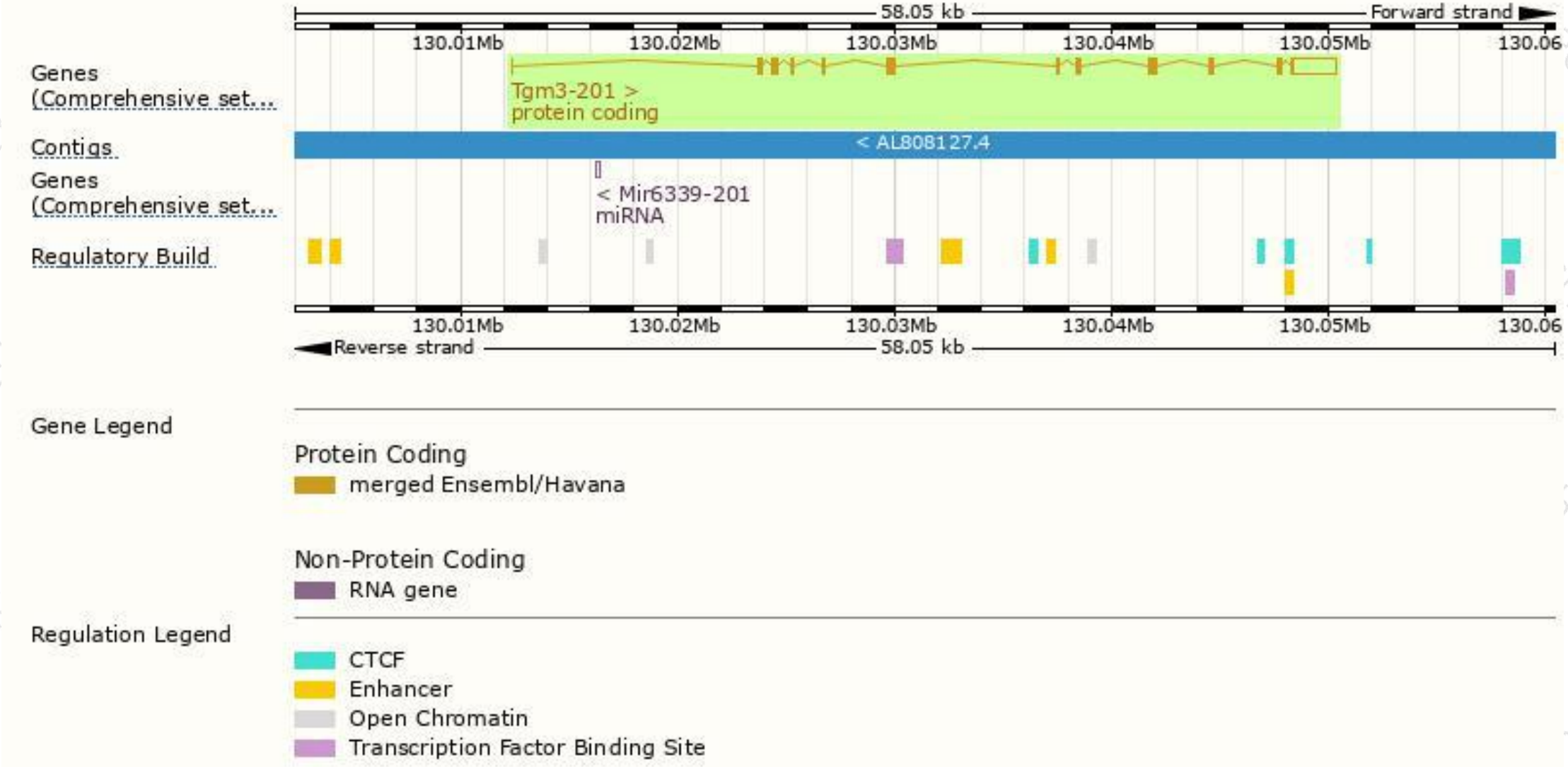
The gene has 1 transcript,and the transcript is shown below:

Name ▲	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Tgm3-201	ENSMUST00000110299.2	4135	693aa	Protein coding	CCDS38240	Q08189	TSL:1 GENCODE basic APPRIS P1

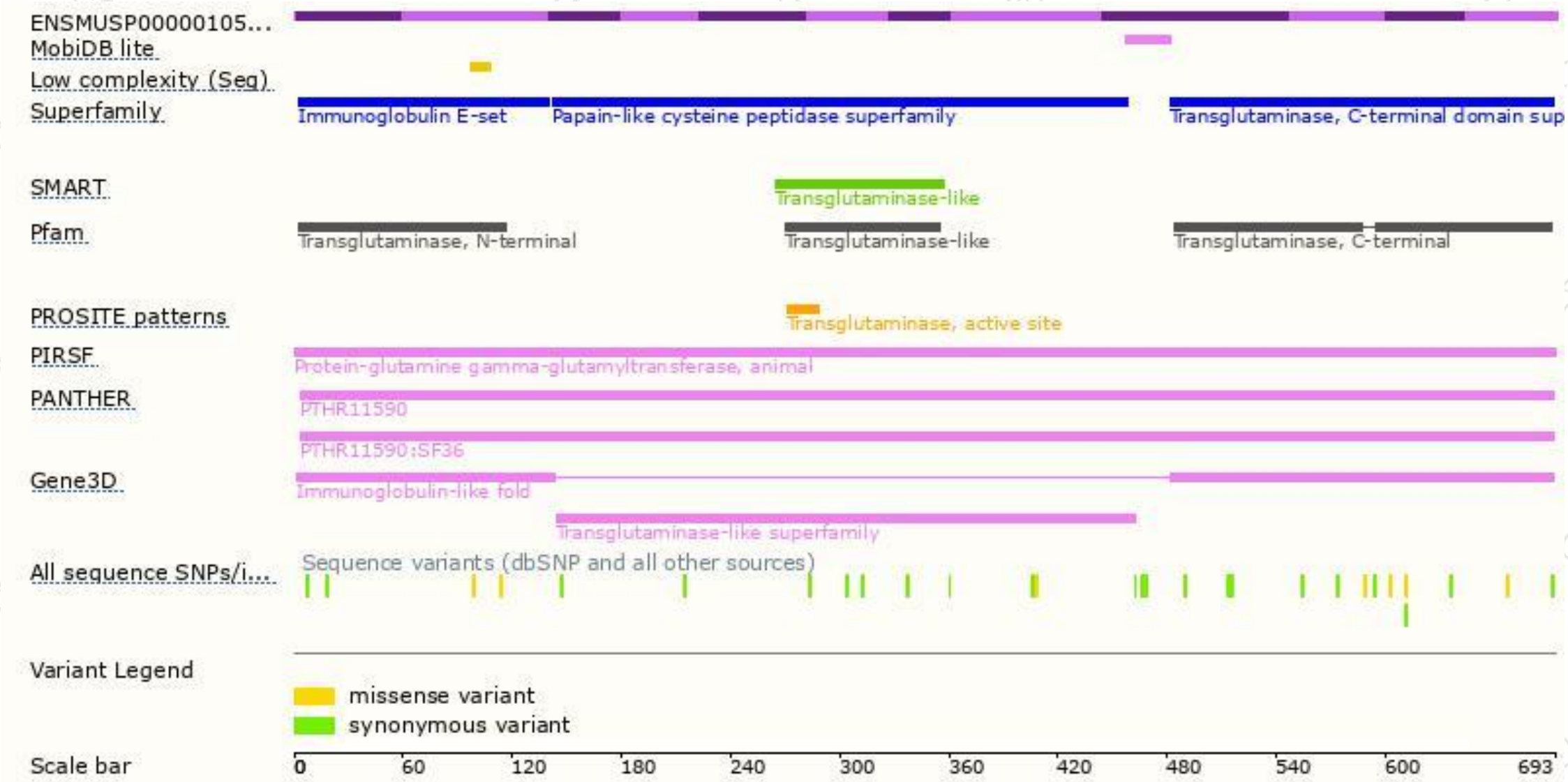
The strategy is based on the design of *Tgm3-201* transcript,The transcription is shown below



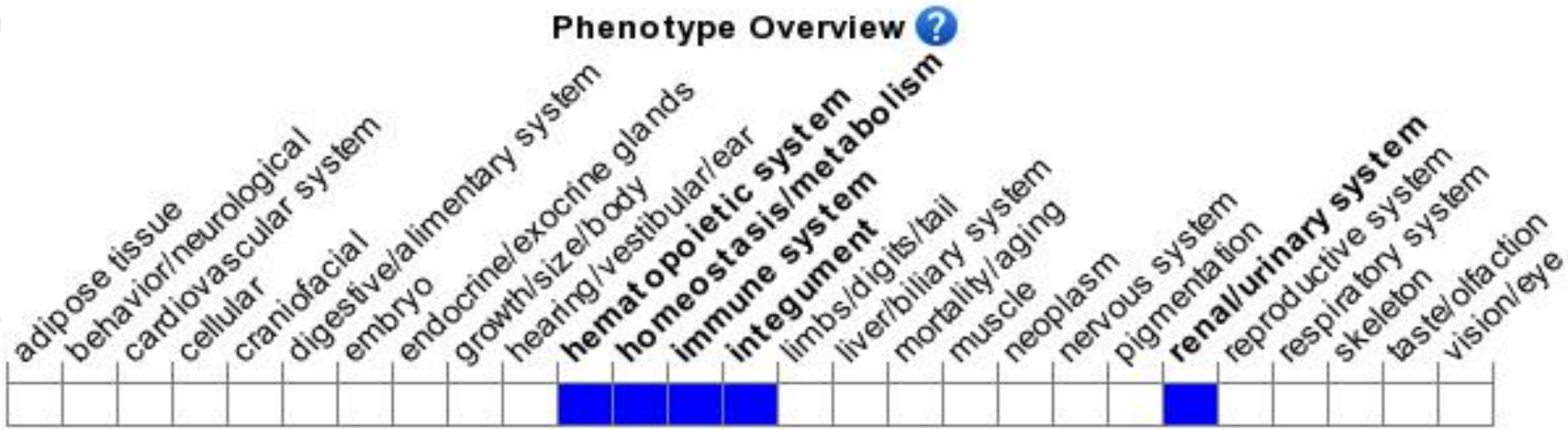
Genomic location distribution



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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集萃药康
GemPharmatech

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

Tel: 400-9660890

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