Pax7 Cas9-CKO Strategy

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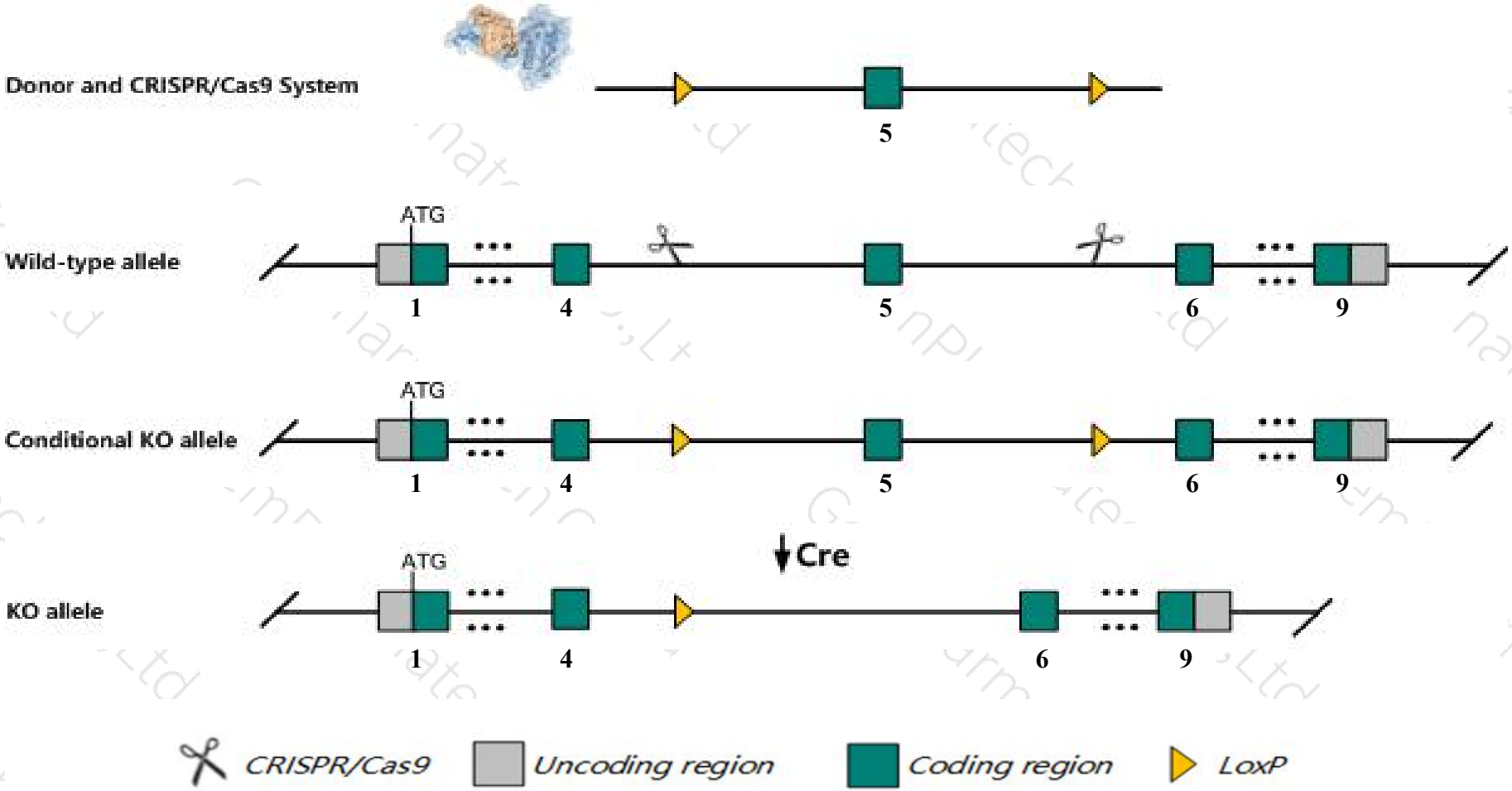
Design Date:2019-8-9

Project Overview

Project Name	***Pax7***
Project type	**Cas9-CKO**
Strain background	**C57BL/6JGpt**

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Pax7* gene. The schematic diagram is as follows:



Technical routes

- The *Pax7* gene has 2 transcripts. According to the structure of *Pax7* gene, exon5 of *Pax7-201* (ENSMUST00000030508.13) transcript is recommended as the knockout region.The region contains 200bp coding sequence. Knock out the region will result in disruption of protein function.

- In this project we use CRISPR/Cas9 technology to modify *Pax7* 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 a targeted null mutation exhibit craniofacial malformations involving the nose and maxilla, and die within three weeks after birth. Mice homozygous for floxed alleles activated in muscle cells exhibit reduced satellite cell numbers and impaired muscle regeneration.

- The *Pax7* gene is located on the Chr4. 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）

集萃药康 GemPharmatech

Pax7 paired box 7 [Mus musculus (house mouse)]

Gene ID: 18509, updated on 9-Apr-2019

Summary

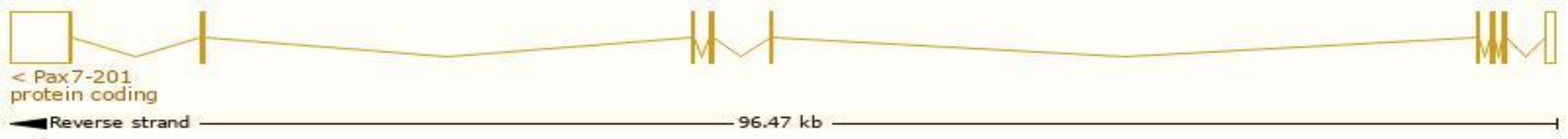
Official Symbol	Pax7 provided by MGI
Official Full Name	paired box 7 provided by MGI
Primary source	MGI:MGI:97491
See related	Ensembl:ENSMUSG00000028736
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	Pax-7
Expression	Biased expression in whole brain E14.5 (RPKM 2.5), CNS E11.5 (RPKM 2.3) and 4 other tissues See more
Orthologs	human all

Transcript information（Ensembl）

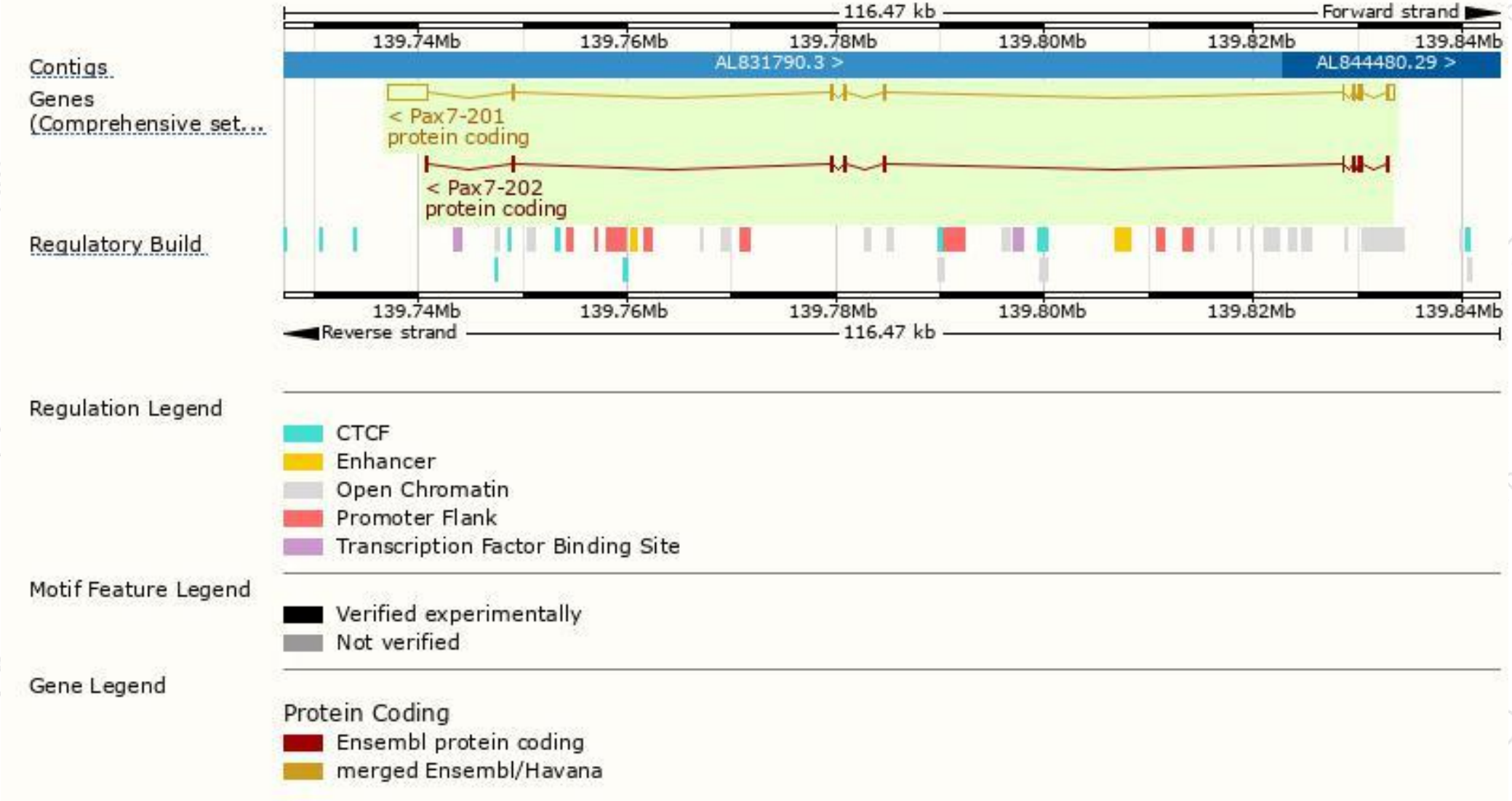
The gene has 2 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Pax7-201	ENSMUST00000030508.13	5854	503aa	Protein coding	CCDS18850	P47239	TSL:1 GENCODE basic APPRIS P2
Pax7-202	ENSMUST00000174681.1	1725	505aa	Protein coding	-	G3UX36	TSL:5 GENCODE basic APPRIS ALT1

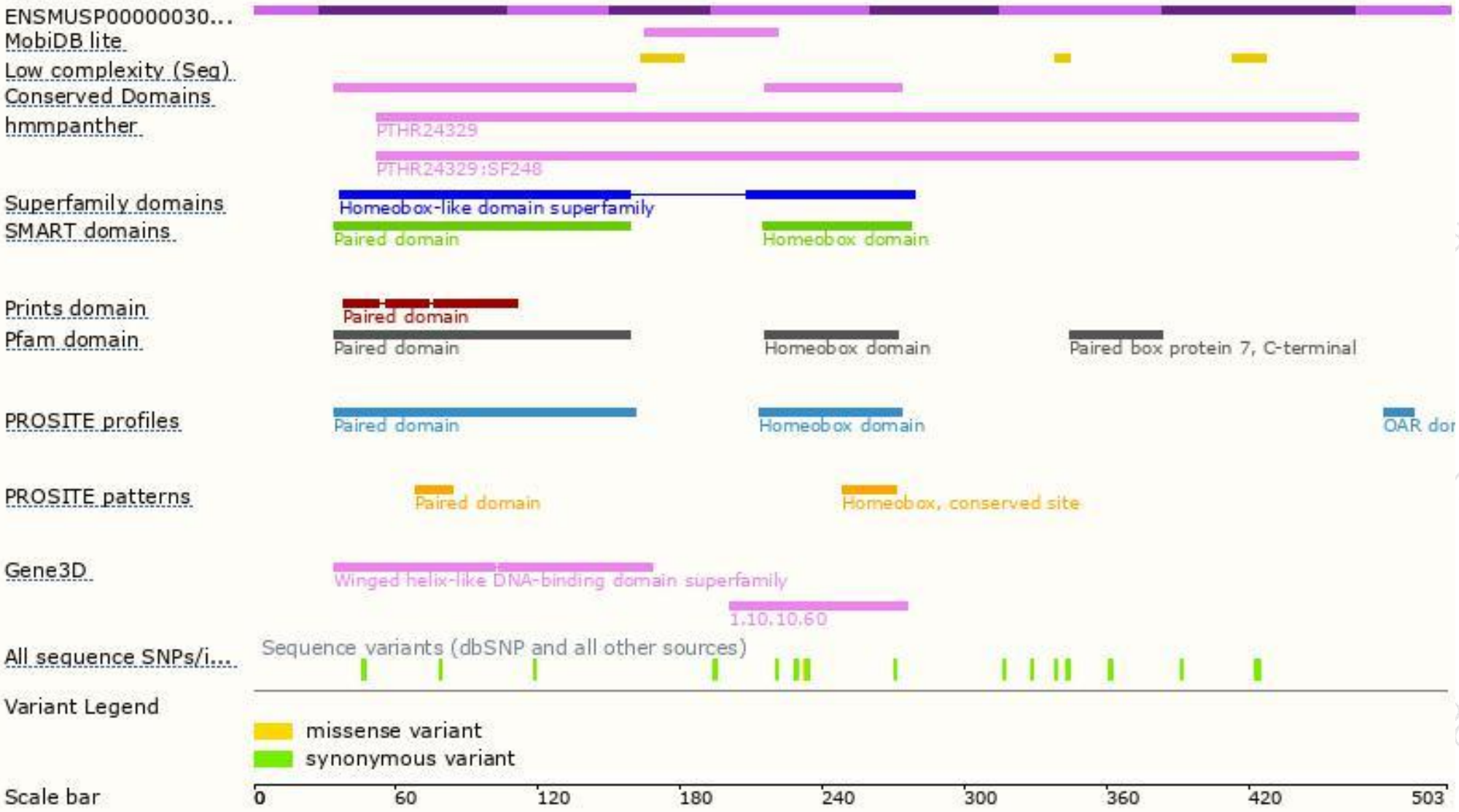
The strategy is based on the design of *Pax7-201* transcript,The transcription is shown below



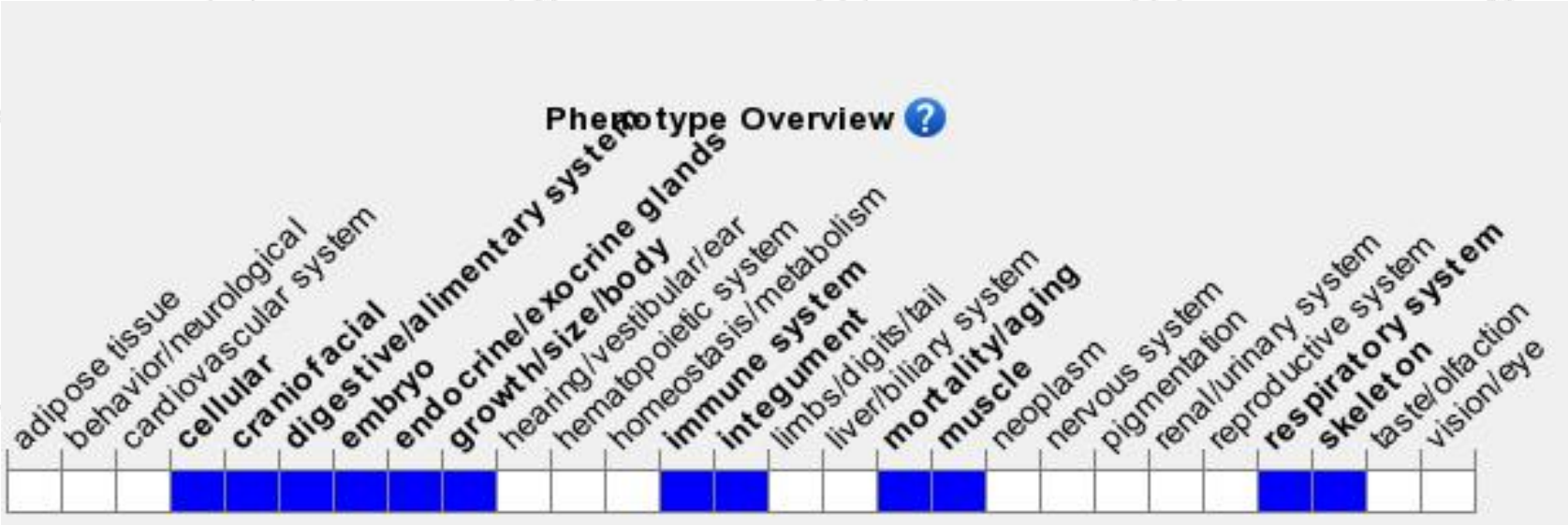
Genomic location distribution



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

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