

***Gpx6* Cas9-CKO Strategy**

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Project Overview

Project Name

Gpx6

Project type

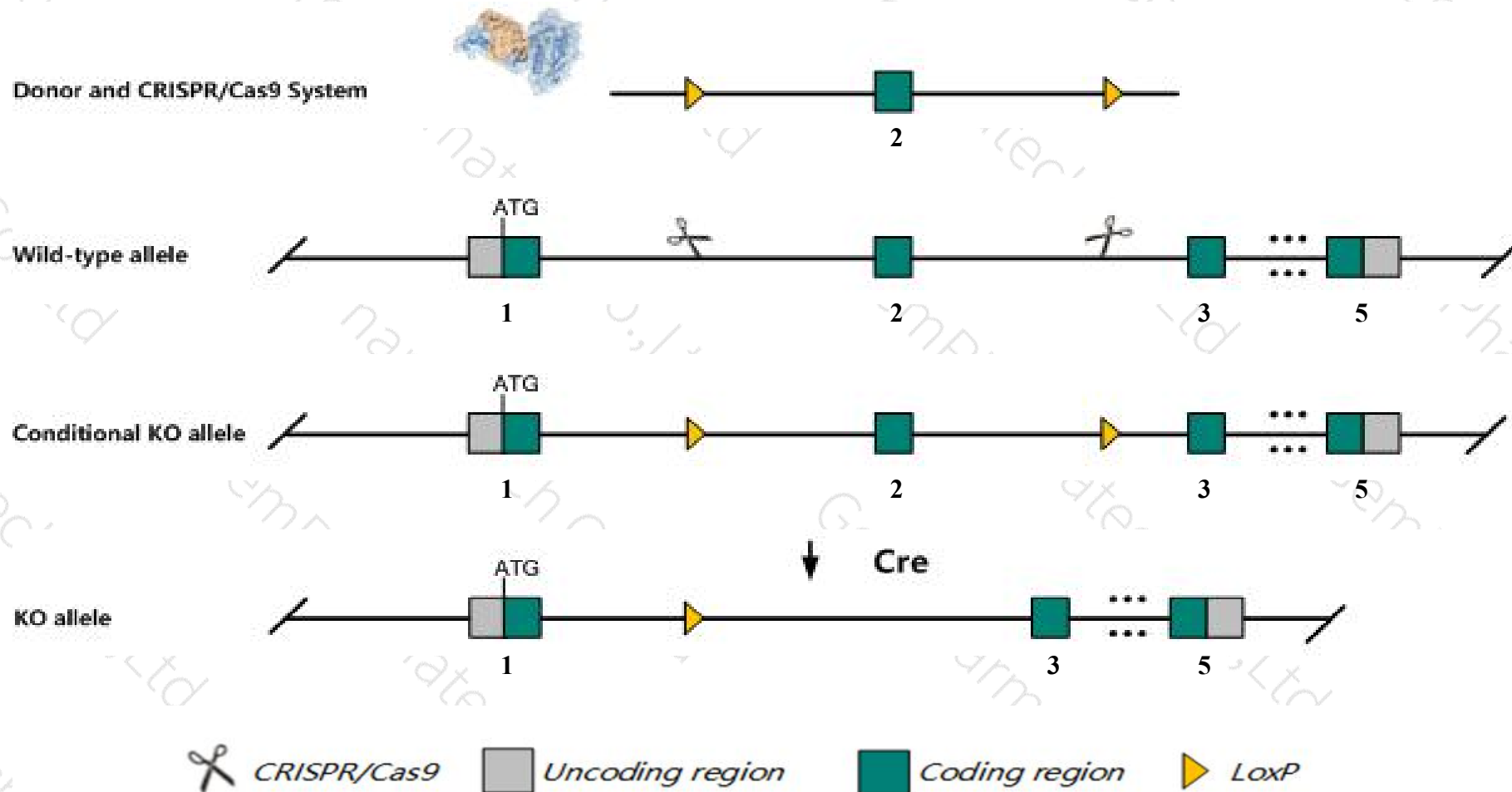
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Gpx6* gene. The schematic diagram is as follows:



Technical routes

- The *Gpx6* gene has 2 transcripts. According to the structure of *Gpx6* gene, exon2 of *Gpx6-201* (ENSMUST00000004453.8) transcript is recommended as the knockout region. The region contains 154bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Gpx6* 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 *Gpx6* 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)

Gpx6 glutathione peroxidase 6 [Mus musculus (house mouse)]

Gene ID: 75512, updated on 13-Mar-2020

Summary



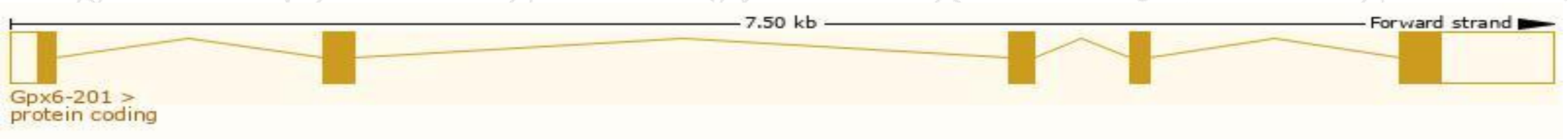
Official Symbol	Gpx6 provided by MGI
Official Full Name	glutathione peroxidase 6 provided by MGI
Primary source	MGI:MGI:1922762
See related	Ensembl:ENSMUSG00000004341
Gene type	protein coding
RefSeq status	REVIEWED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	1700020G18Rik, Ry2d1, olfactory
Summary	This gene encodes a member of the glutathione peroxidase family. Glutathione peroxidases catalyze the reduction of a variety of hydroperoxides using glutathione as a specific electron donor substrate, and thereby protect cells against oxidative damage. Expression of this gene is restricted to embryos and adult olfactory epithelium. The mouse and rat orthologs contain a cysteine (Cys) residue at the active site, unlike the human counterpart, which is a selenoprotein, containing selenocysteine (Sec) instead. [provided by RefSeq, Jul 2017]
Expression	Biased expression in testis adult (RPKM 15.5), genital fat pad adult (RPKM 13.6) and 1 other tissue See more

Transcript information (Ensembl)

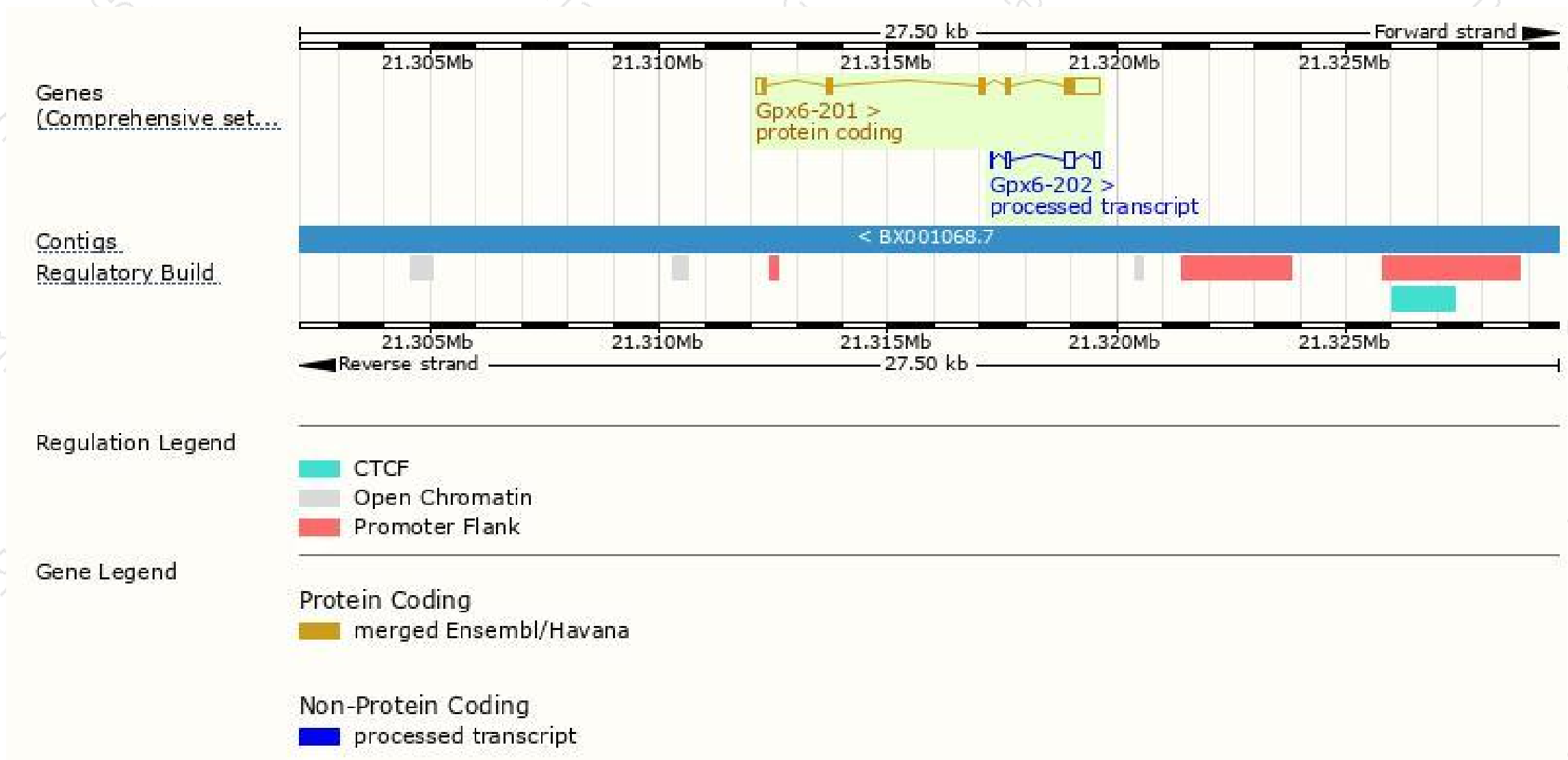
The gene has 2 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Gpx6-201	ENSMUST00000004453.8	1340	221aa	Protein coding	CCDS26271	Q91WR8	TSL:1 GENCODE basic APPRIS P1
Gpx6-202	ENSMUST00000136668.1	475	No protein	Processed transcript	-	-	TSL:1

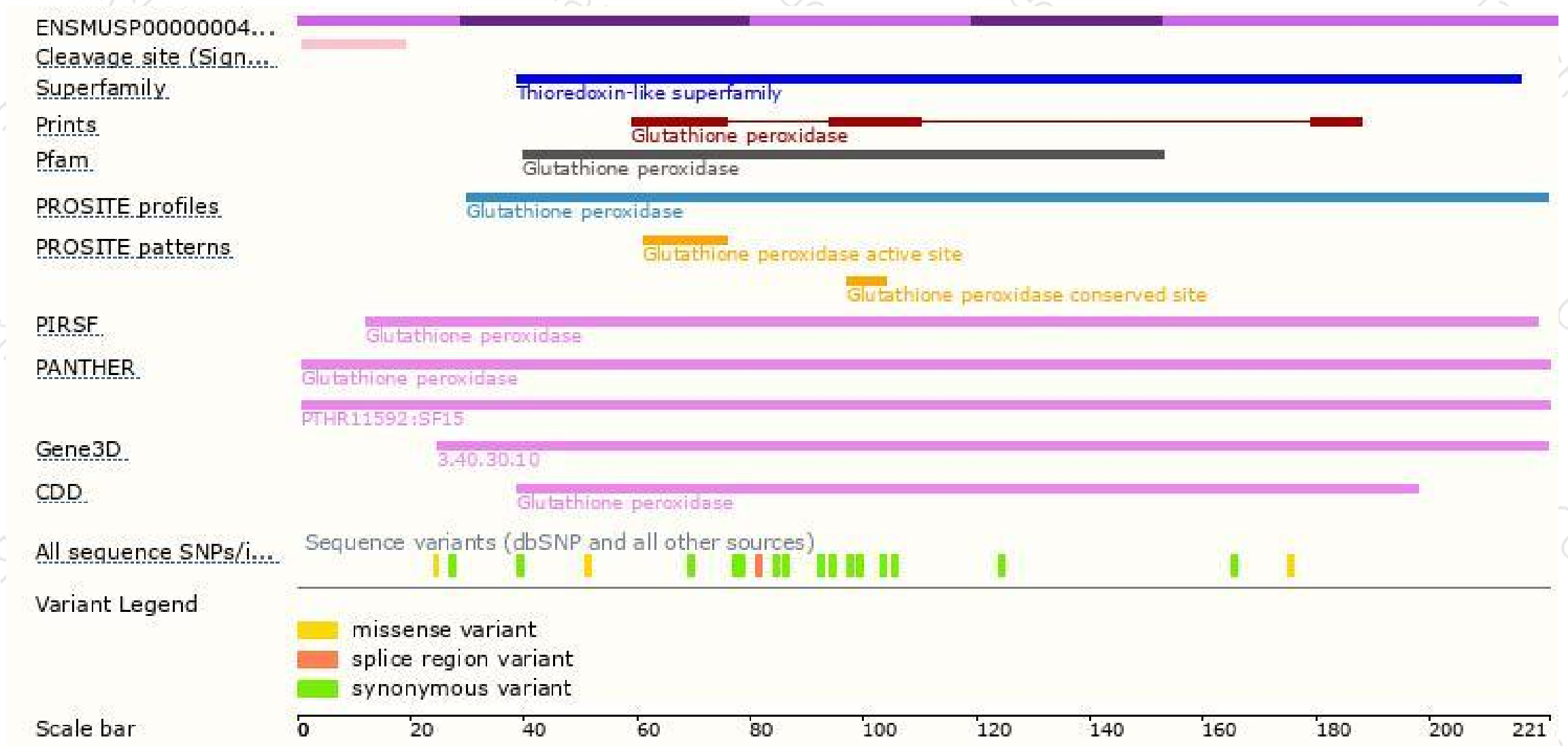
The strategy is based on the design of *Gpx6-201* transcript,the transcription is shown below:



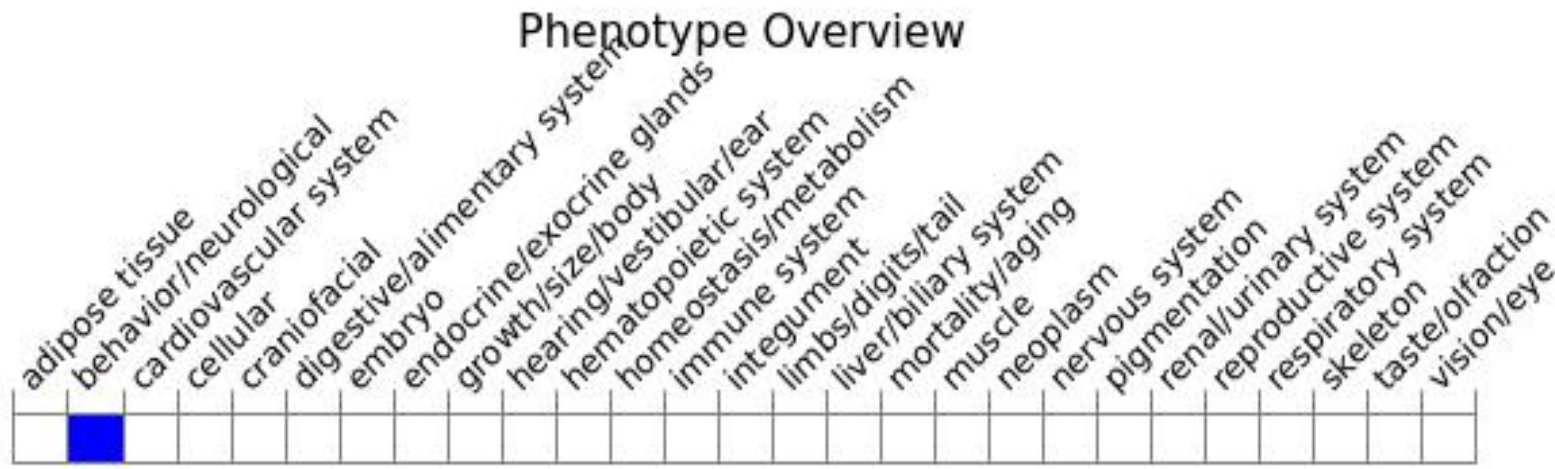
Genomic location distribution



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/>).

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

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