Hspg2 Cas9-KO *Strategy*

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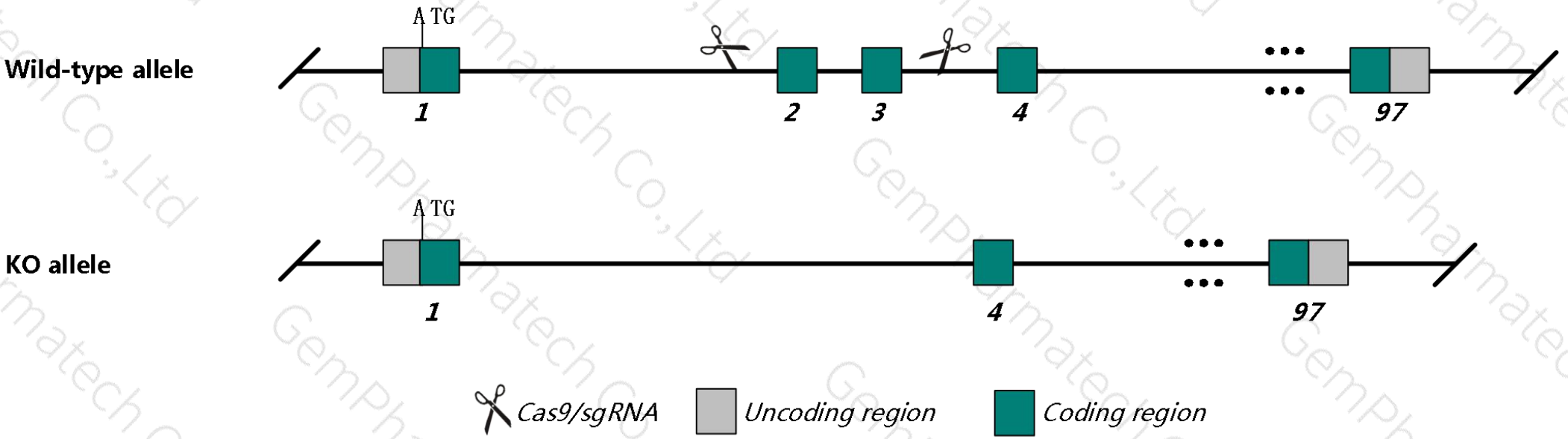
Project Overview

Project Name	***Hspg2***
Project type	**Cas9-KO**
Strain background	**C57BL/6JGpt**

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Hspg2* gene. The schematic diagram is as follows:



Technical routes

- The *Hspg2* gene has 3 transcripts.According to the structure of *Hspg2* gene, exon2-3 of *Hspg2*-203 transcript is recommended as the knockout region.The region contains 181bp coding sequence.Knock out the region will result in disruption of protein function.

- In this project we use CRISPR/Cas9 technology to modify *Hspg2* gene. The brief process is as follows: gRNA was transcribed in vitro.Cas9 and gRNA 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.

Notice

- According to the existing MGI data，Homozygous targeted null mutants die either at embryonic day 10.5 with cardiac outflow defects and/or brain exencephaly or at birth with skeletal dysplasia including micromelia and craniofacial defects. An exon 3 deletion mutant shows only a lens defect.

- The *Hspg2* gene is located on the Chr 4. 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 gene transcription and translation processes, all risks cannot be predicted under existing information.

Gene information （NCBI）

集萃药康 GemPharmatech

Hspg2 perlecan (heparan sulfate proteoglycan 2) [*Mus musculus* (house mouse)]

Gene ID: 15530, updated on 14-May-2019

Summary

Official Symbol	Hspg2 provided by MGI
Official Full Name	perlecan (heparan sulfate proteoglycan 2) provided by MGI
Primary source	MGI:MGI:96257
See related	Ensembl:ENSMUSG00000028763
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	Pcn; Plc; per; HSPG; AI852380
Expression	Broad expression in adrenal adult (RPKM 35.2), subcutaneous fat pad adult (RPKM 30.9) and 20 other tissues See more
Orthologs	human all

Transcript information（Ensembl）

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

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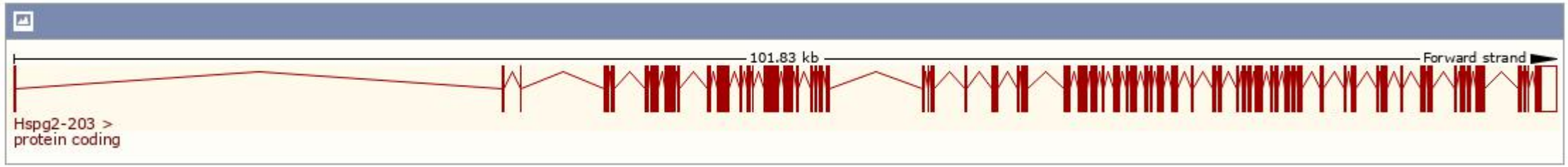
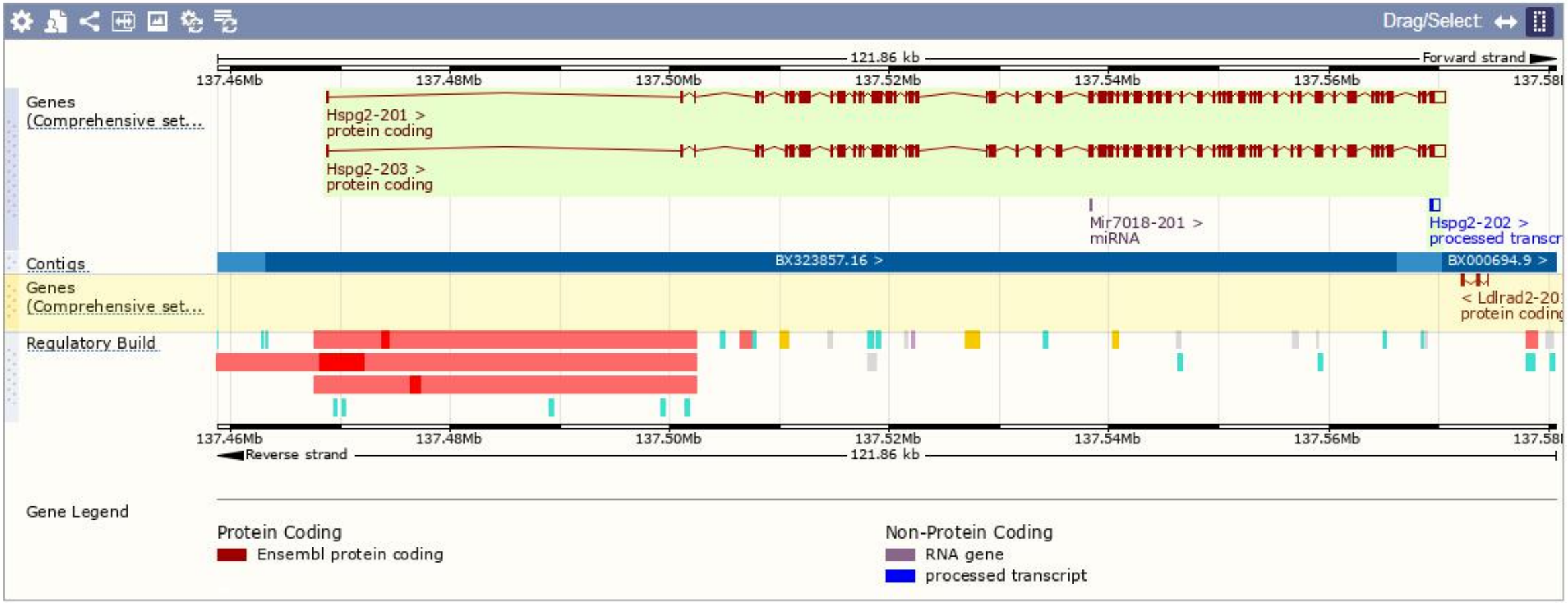
Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Hspg2-203	ENSMUST00000171332.1	14176	4383aa	Protein coding	CCDS51333	E9PZ16	TSL:5 GENCODE basic APPRIS P2
Hspg2-201	ENSMUST00000030547.14	14187	4375aa	Protein coding	-	B1B0C7	TSL:5 GENCODE basic APPRIS ALT2
Hspg2-202	ENSMUST00000155648.1	820	No protein	Processed transcript	-	-	TSL:2

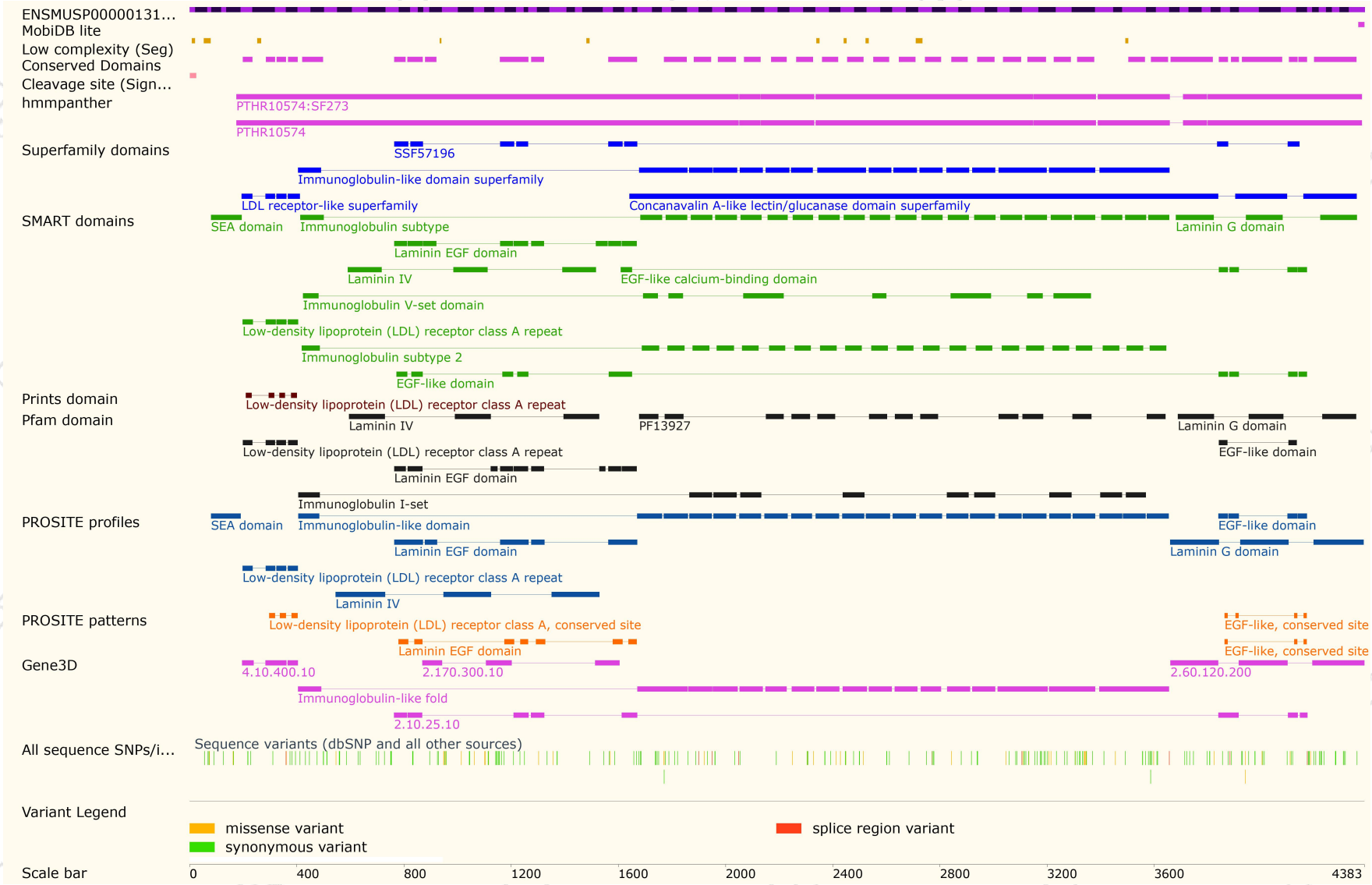
The strategy is based on the design of *Hspg2-203* transcript,The transcription is shown below



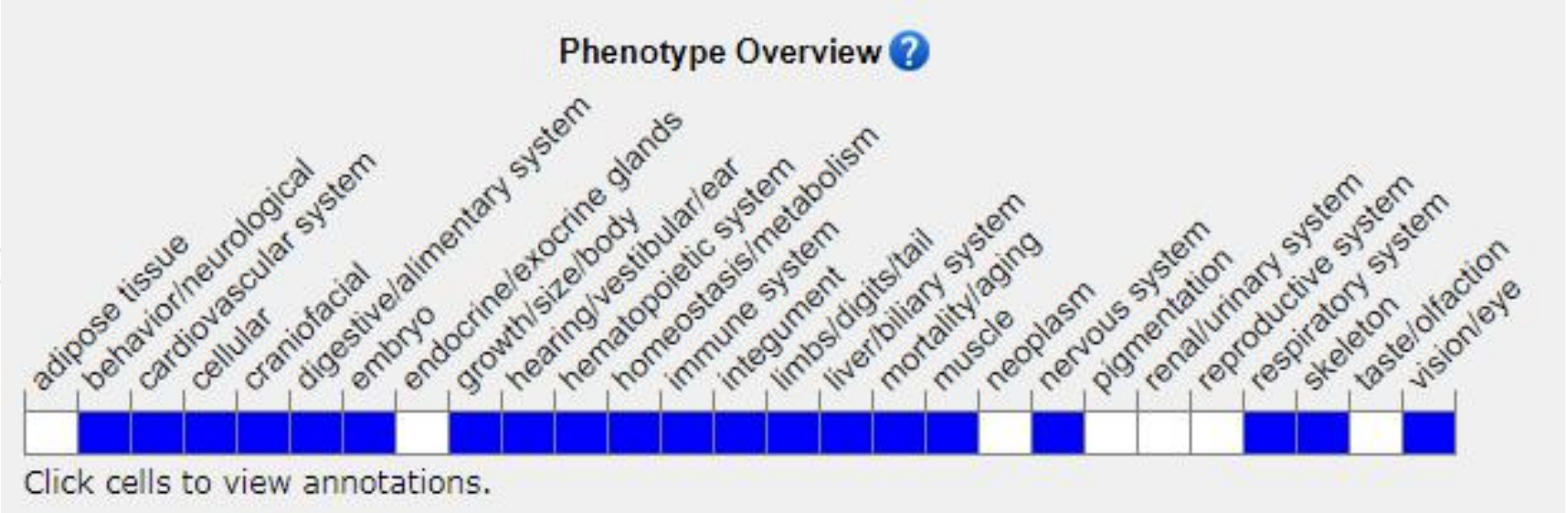
Genomic location (Ensembl)



Protein domain (Ensembl)



Mouse phenotype description(MGI)



Phenotypes affected by the gene are marked in blue.Data quoted from MGI database(http://www.informatics.jax.org/) .

According to the existing MGI data,Mutations in this locus affect cell-cycle regulation and apoptos is. Null homozygotes show high, early-onset tumor incidence; some have persistent hyaloid vasculature and cataracts. Truncated or temperature-sensitive alleles cause early aging phenotypes.

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