Dsg3 Cas9-CKO Strategy

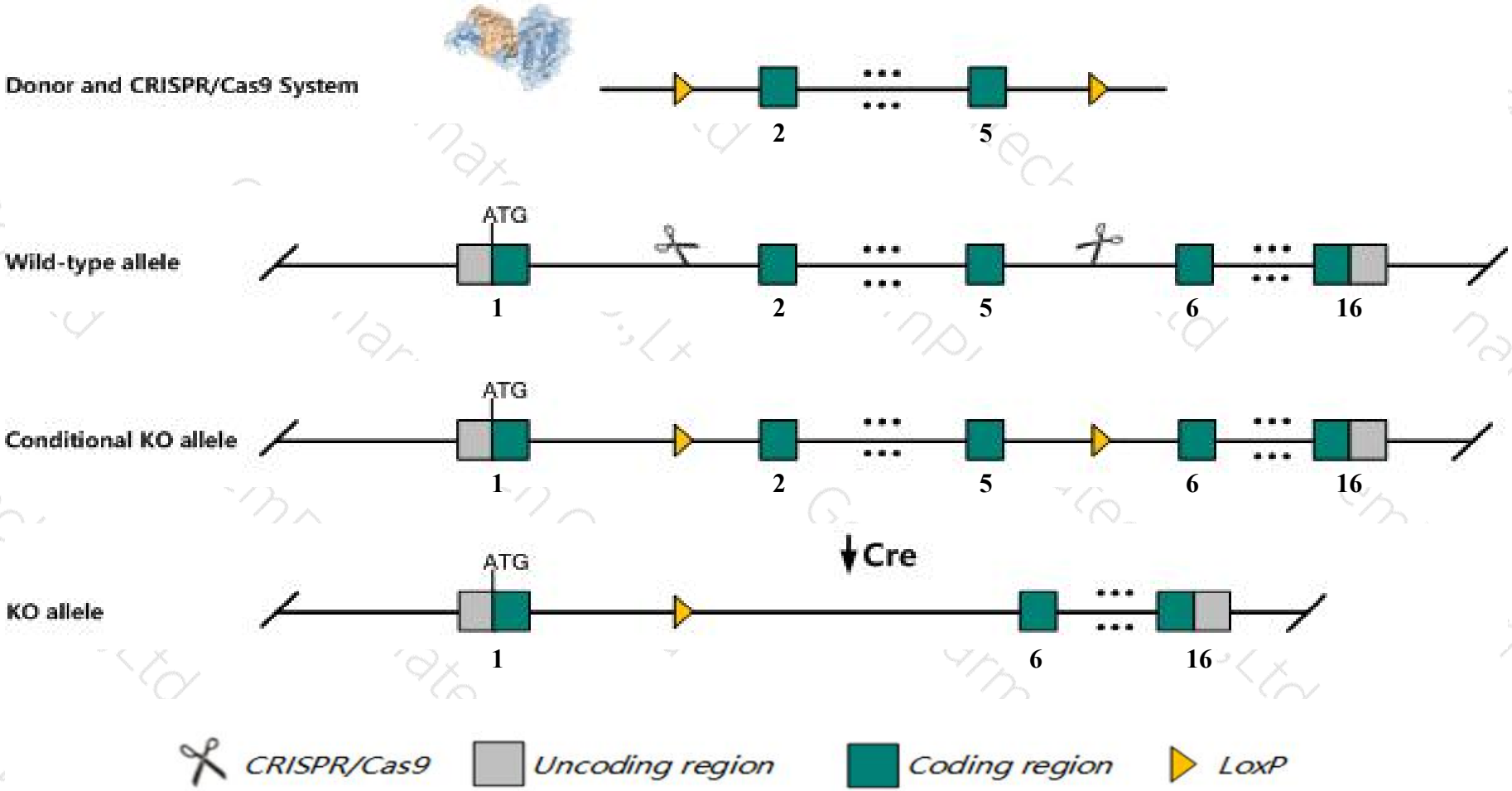
Designer:Xueting Zhang

Project Overview

Project Name	***Dsg3***
Project type	**Cas9-CKO**
Strain background	**C57BL/6JGpt**

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Dsg3* gene. The schematic diagram is as follows:



Technical routes

- The *Dsg3* gene has 2 transcripts. According to the structure of *Dsg3* gene, exon2-exon5 of *Dsg3-201* (ENSMUST00000070892.7) transcript is recommended as the knockout region.The region contains 469bp coding sequence. Knock out the region will result in disruption of protein function.

- In this project we use CRISPR/Cas9 technology to modify *Dsg3* 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,Homozygous mutants display runting from decreased food intake due to oropharyngeal epithelial lesions, blisters around snout and eyes, hair loss by weaning, and hair regrowth with bald patches throughout life.

- The *Dsg3* gene is located on the Chr18. 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

Dsg3 desmoglein 3 [Mus musculus (house mouse)]

Gene ID: 13512, updated on 31-Jan-2019

Summary

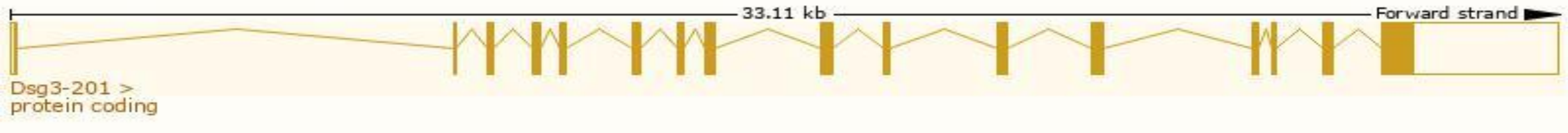
Official Symbol	Dsg3 provided by MGI
Official Full Name	desmoglein 3 provided by MGI
Primary source	MGI:MGI:99499
See related	Ensembl:ENSMUSG00000056632
Gene type	protein coding
RefSeq status	REVIEWED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	bal
Summary	This gene encodes a member of the cadherin family of proteins that forms an integral transmembrane component of desmosomes, the multiprotein complexes involved in cell adhesion, organization of the cytoskeleton, cell sorting and cell signaling. The encoded preproprotein undergoes proteolytic processing to generate a mature, functional protein. Mice lacking the encoded protein exhibit loss of keratinocyte cell adhesion resulting in a phenotype that resembles that of patients with pemphigus vulgaris. This gene is located in a cluster of desmosomal cadherin genes on chromosome 18. [provided by RefSeq, Feb 2016]
Expression	Biased expression in stomach adult (RPKM 2.1), lung adult (RPKM 1.0) and 4 other tissuesSee more
Orthologs	human all

Transcript information（Ensembl）

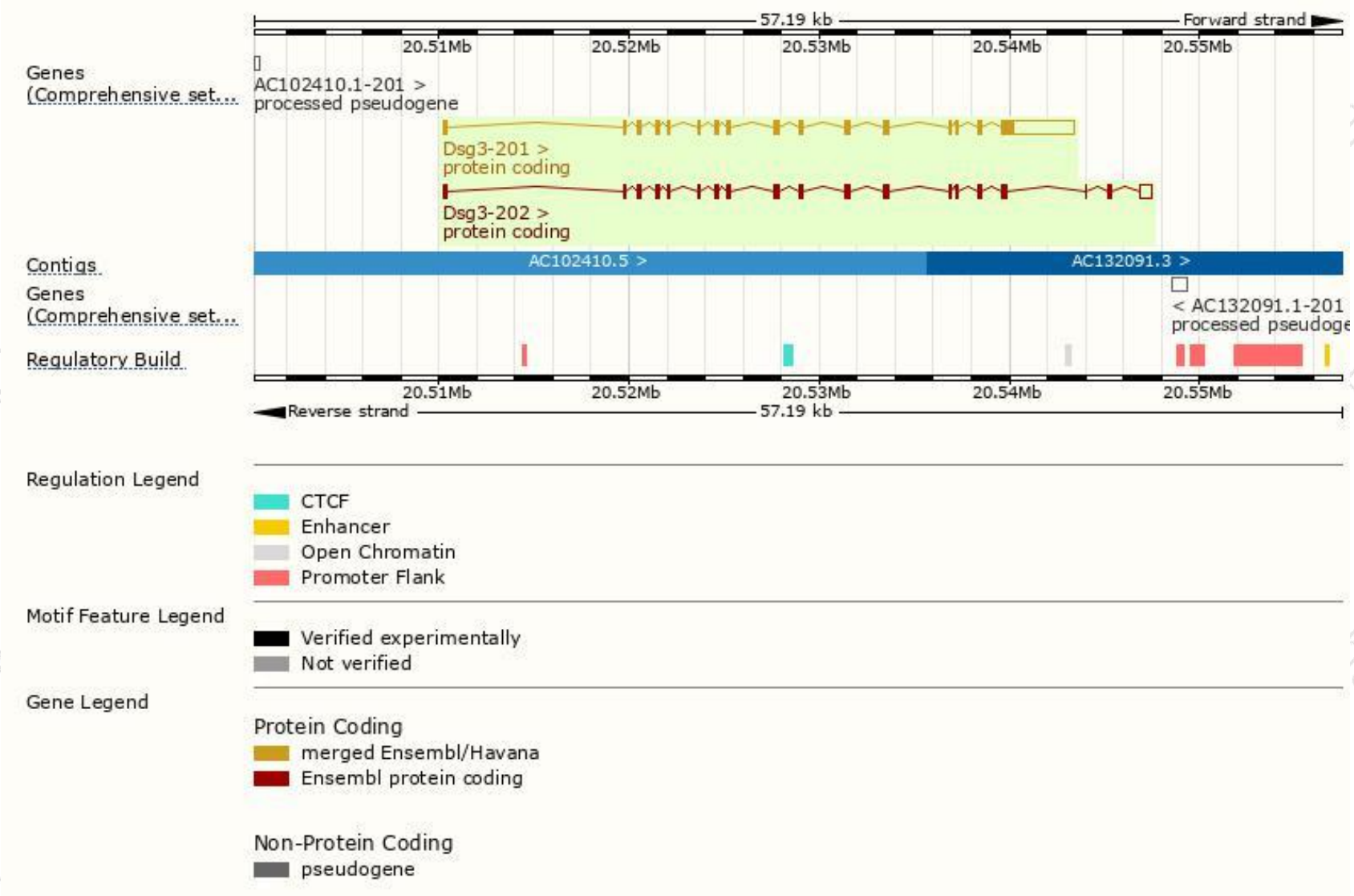
The gene has 2 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Dsg3-201	ENSMUST00000070892.7	6212	993aa	Protein coding	CCDS29083	Q3UFC6	TSL:1 GENCODE basic APPRIS P2
Dsg3-202	ENSMUST00000234945.1	3482	929aa	Protein coding	-	-	GENCODE basic APPRIS ALT2

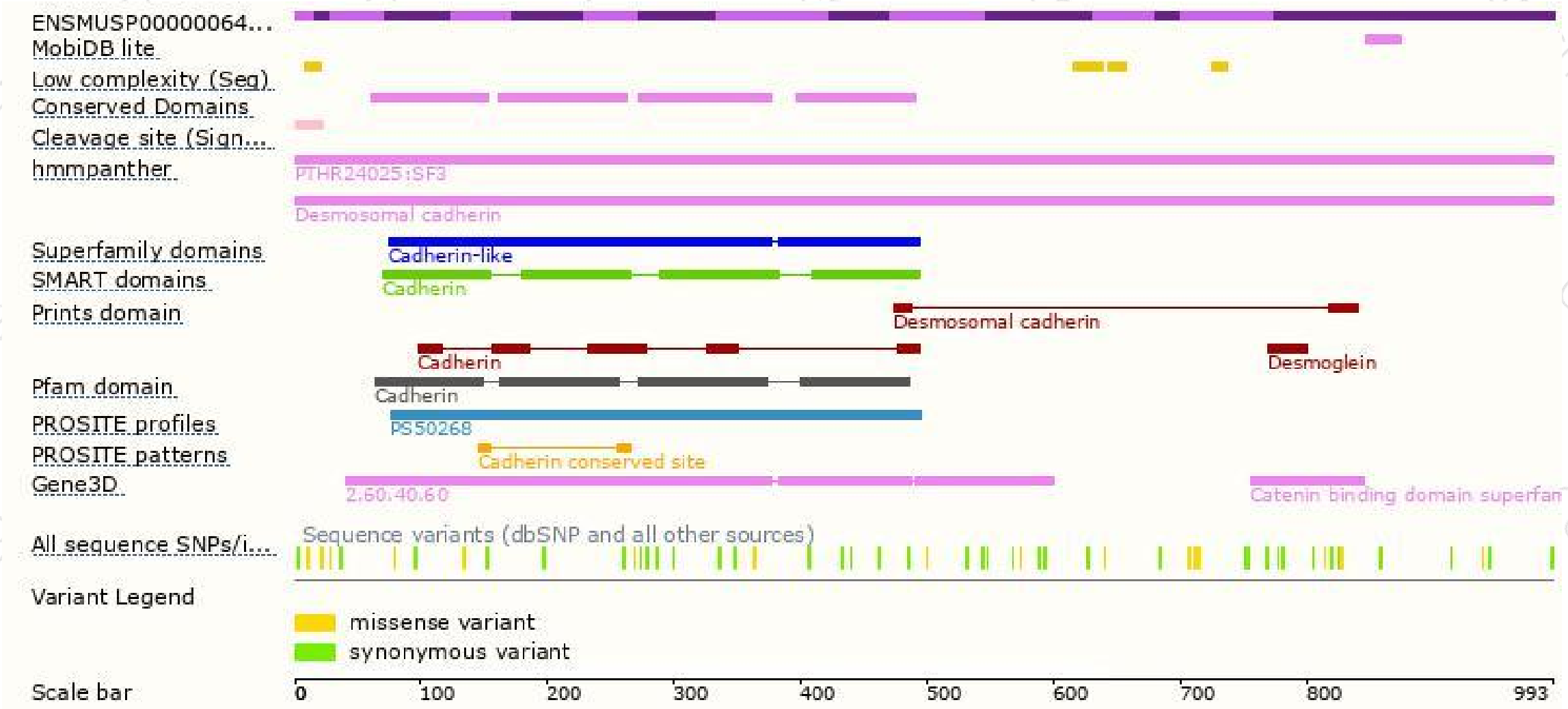
The strategy is based on the design of *Dsg3-201* transcript,The transcription is shown below



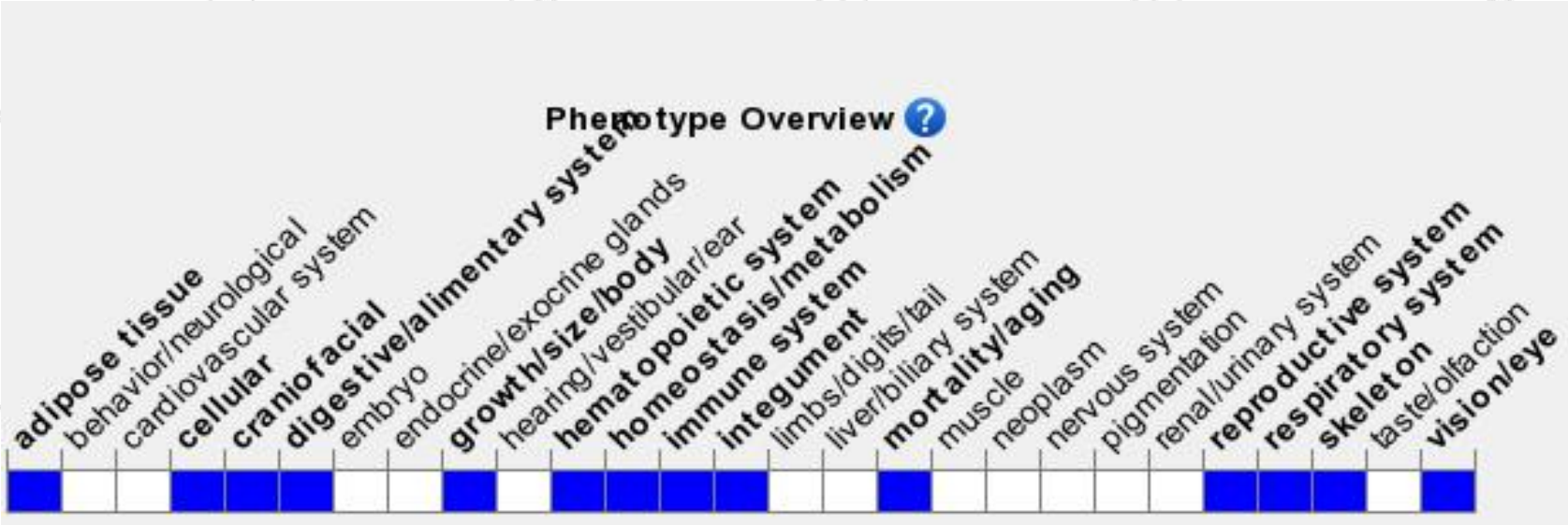
Genomic location distribution



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/).

According to the existing MGI data,Homozygous mutants display runting from decreased food intake due to oropharyngeal epithelial lesions, blisters around snout and eyes, hair loss by weaning, and hair regrowth with bald patches throughout life.

集萃药康
GemPharmatech

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

Tel: 400-9660890

集萃药康生物科技
GemPharmatech Co.,Ltd