Scgb1a1 Cas9-CKO Strategy

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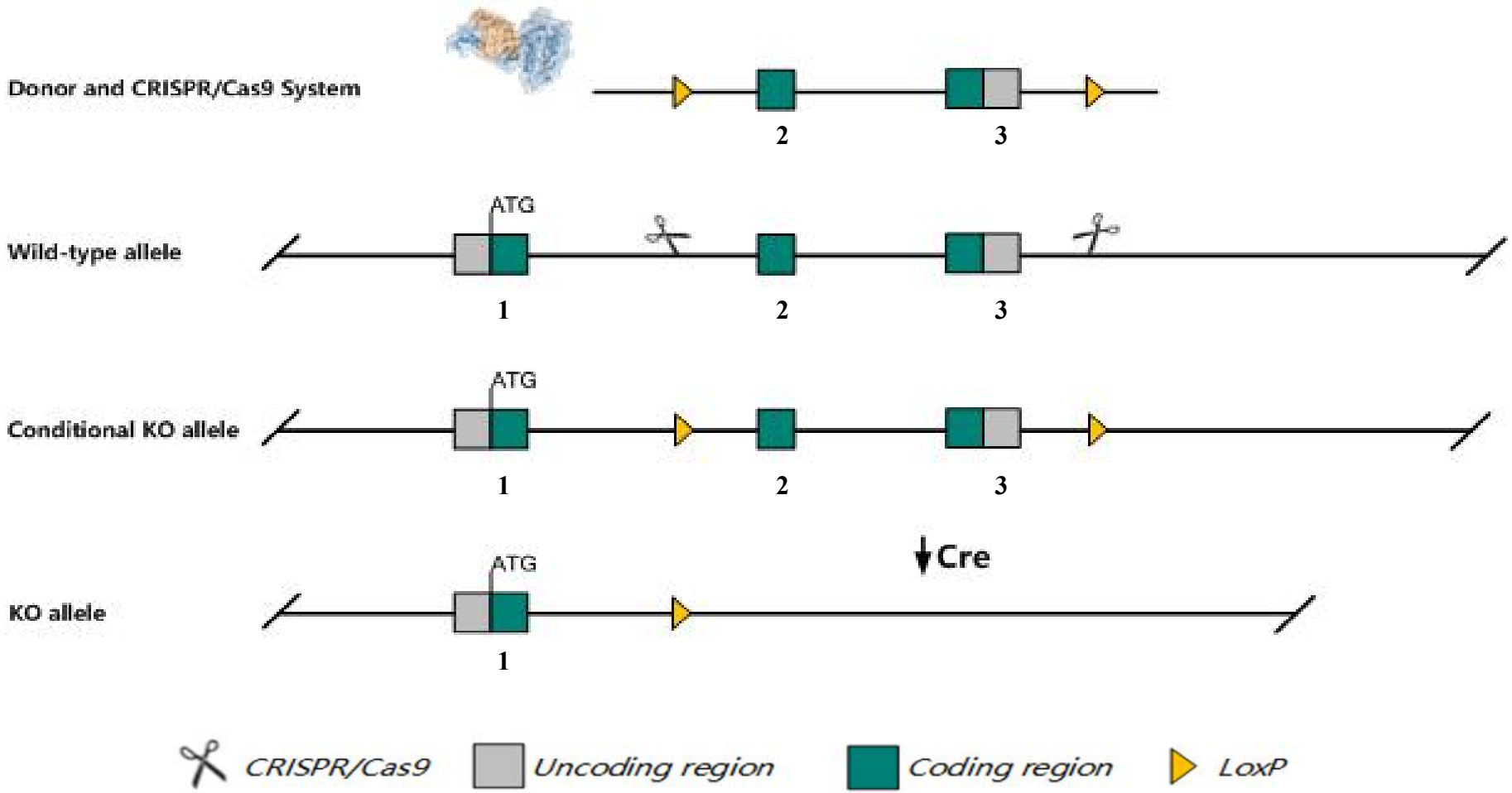
Project Overview

Project Name	***Scgb1a1***
Project type	**Cas9-CKO**
Strain background	**C57BL/6JGpt**

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Scgb1a1* gene. The schematic diagram is as follows:



Technical routes

The *Scgb1a1* gene has 1 transcript. According to the structure of *Scgb1a1* gene, exon2-exon3 of *Scgb1a1-201*(ENSMUST00000025554.2) transcript is recommended as the knockout region.The region contains 236bp coding sequence. Knock out the region will result in disruption of protein function.

In this project we use CRISPR/Cas9 technology to modify *Scgb1a1* 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,homozygotes for targeted null mutations exhibit progressive renal glomerular disease characterized by proteinuria and hypocalcemia, necrotic pancreatic foci, reduced pulmonary neuroendocrine bodies, weight loss, cachexia, and premature mortality.

The *Scgb1a1* gene is located on the Chr19. 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

Scgb1a1 secretoglobin, family 1A, member 1 (uteroglobin) [Mus musculus (house mouse)]

Gene ID: 22287, updated on 13-Mar-2020

Summary

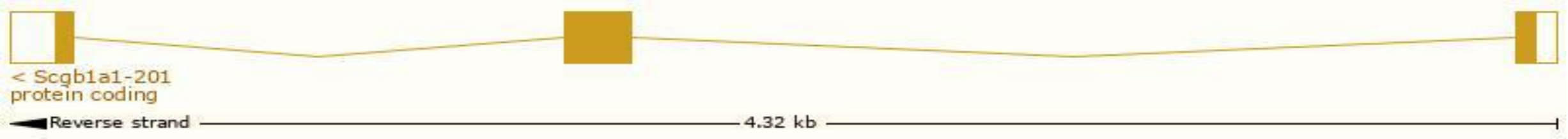
Official Symbol	Scgb1a1 provided by MGI
Official Full Name	secretoglobin, family 1A, member 1 (uteroglobin) provided byMGI
Primary source	MGI:MGI:98919
See related	Ensembl:ENSMUSG00000024653
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	CC10, CC16, CCSP, PCB-BP, UG, UGB, Utg
Expression	Restricted expression toward lung adult (RPKM 38510.4)See more
Orthologs	human all

Transcript information Ensembl

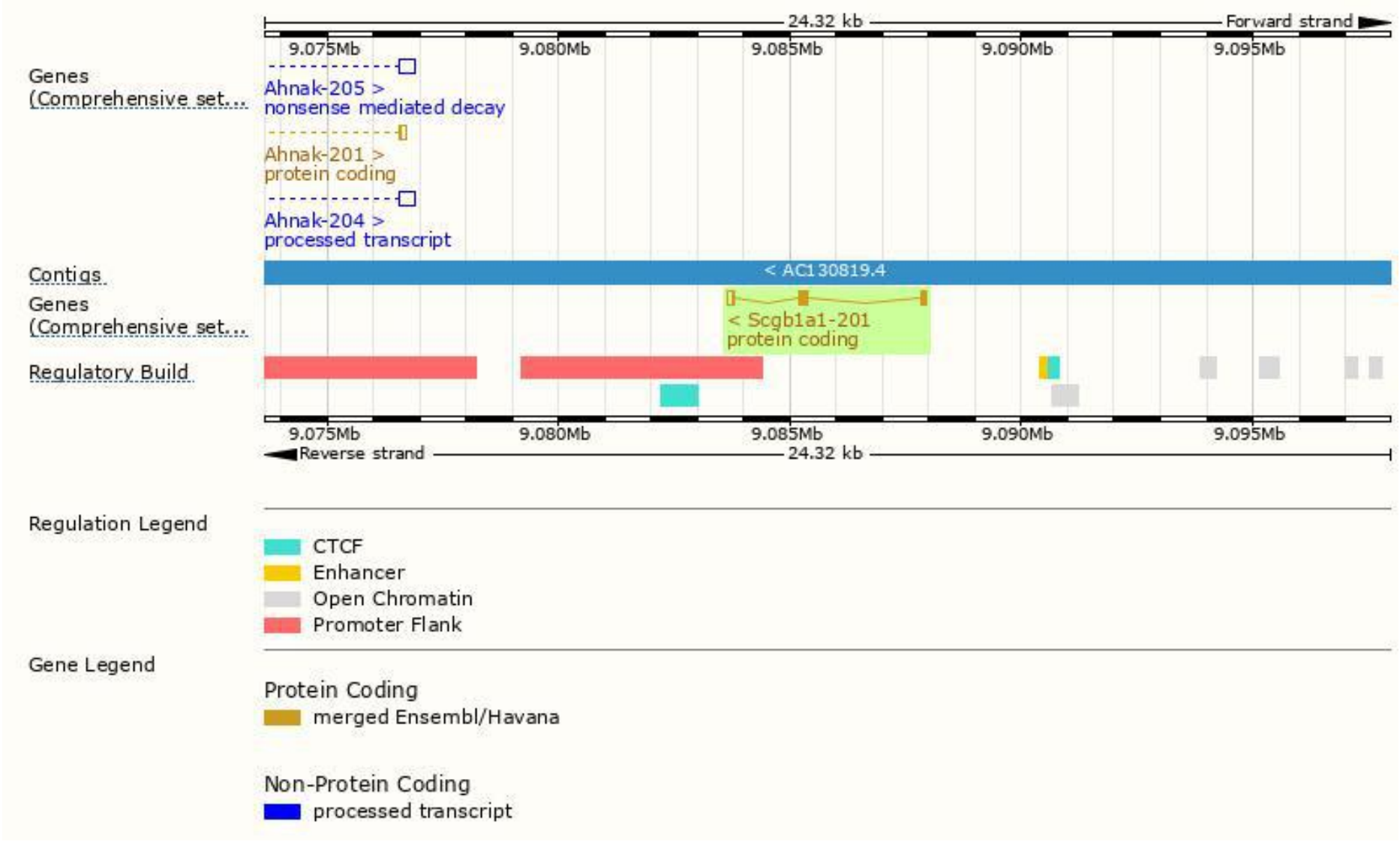
The gene has 1 transcript,and the transcript is shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Scgb1a1-201	ENSMUST00000025554.2	476	96aa	Protein coding	CCDS37911	Q06318 Q3UKV9	TSL:1 GENCODE basic APPRIS P1

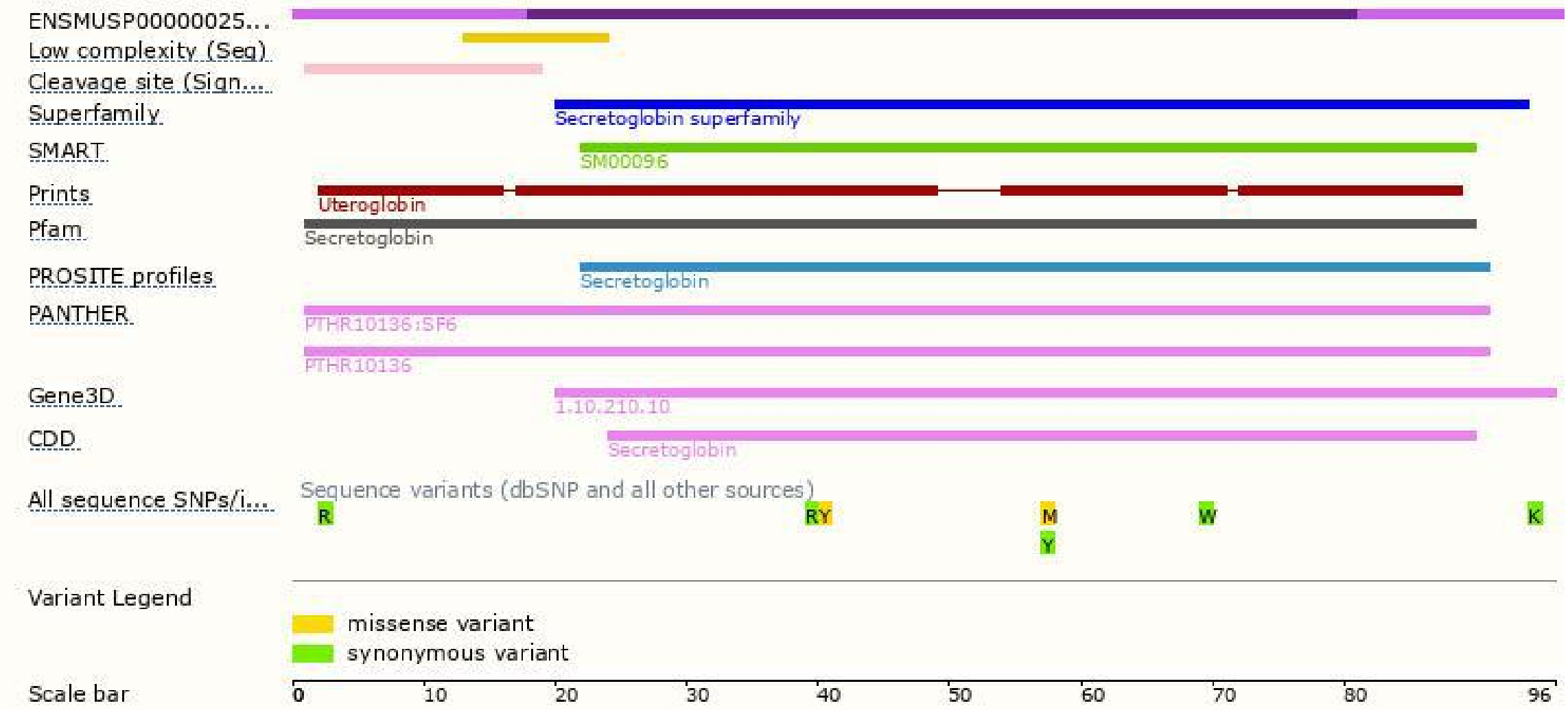
The strategy is based on the design of *Scgb1a1-201* transcript,the transcription is shown below:



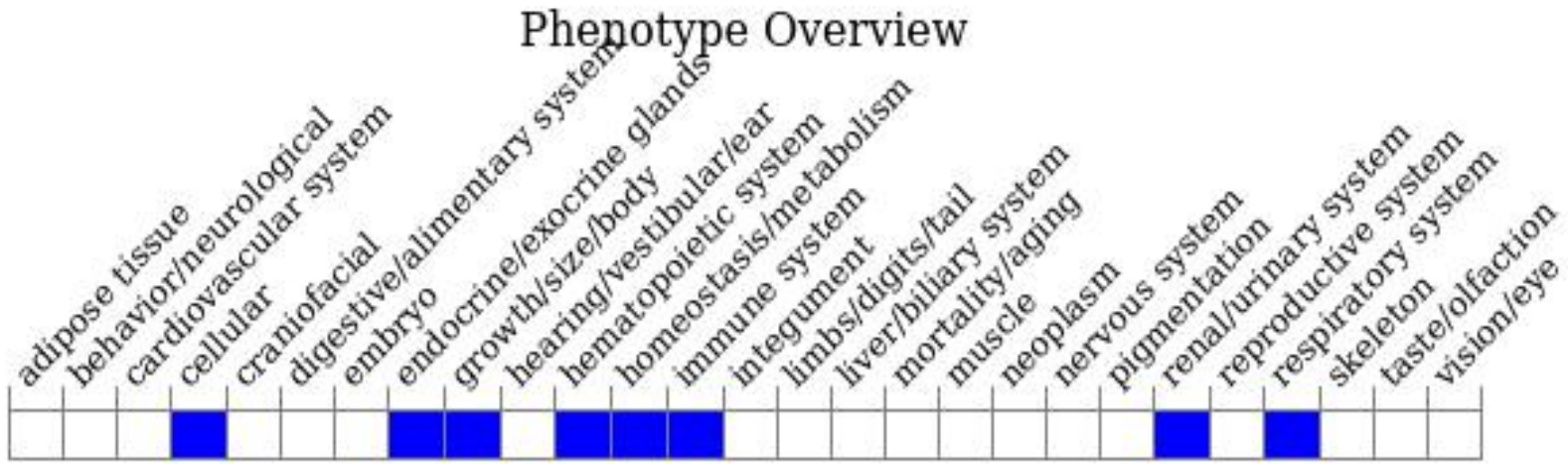
Genomic location distribution



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,homozygotes for targeted null mutations exhibit progressive renal glomerular disease characterized by proteinuria and hypocalcemia, necrotic pancreatic foci, reduced pulmonary neuroendocrine bodies, weight loss, cachexia, and premature mortality.

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