Sytl2 Cas9-CKO Strategy

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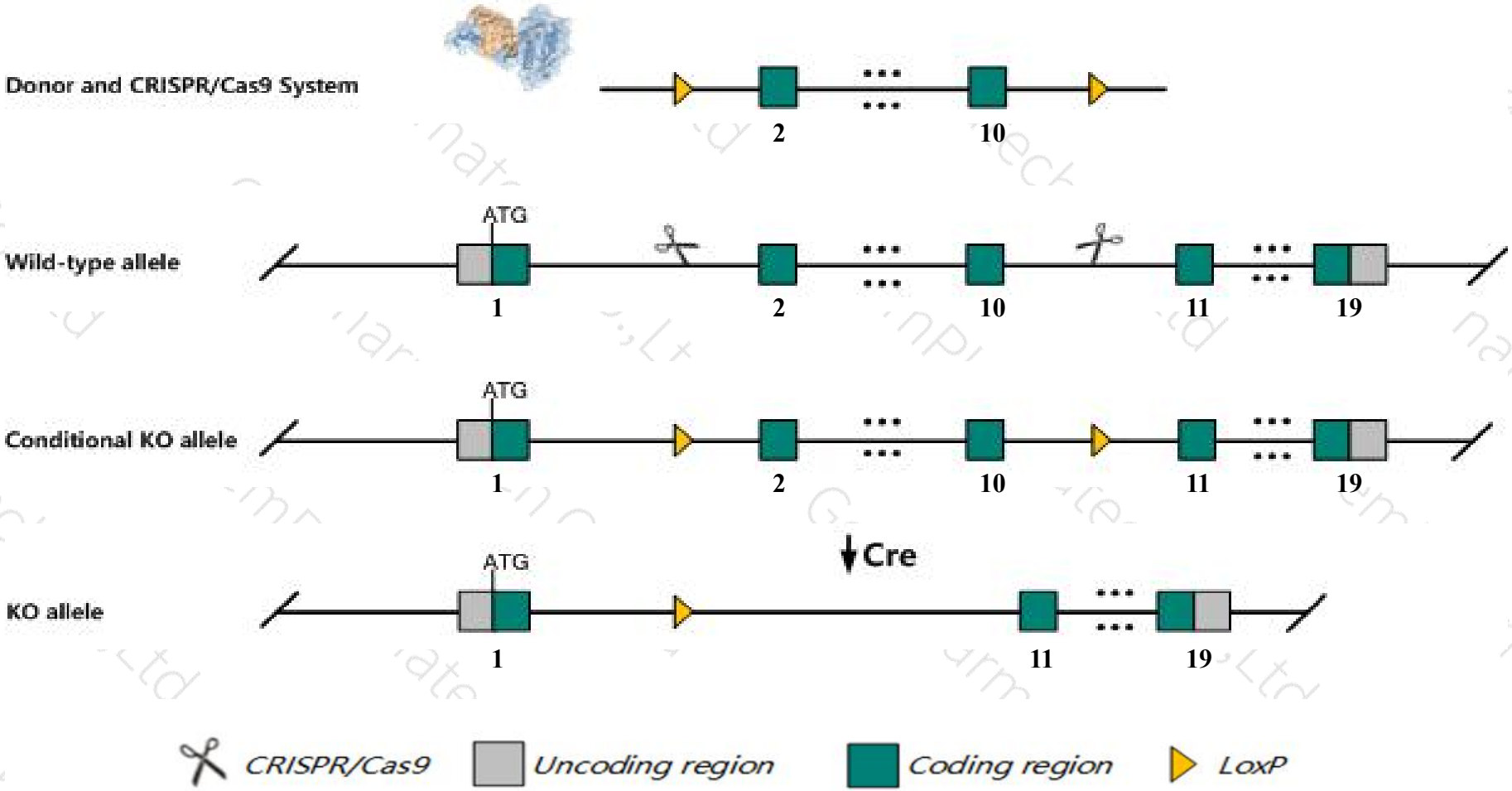
Project Overview

Project Name	***Sytl2***
Project type	**Cas9-CKO**
Strain background	**C57BL/6JGpt**

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Sytl2* gene. The schematic diagram is as follows:



Technical routes

- The *Sytl2* gene has 19 transcripts. According to the structure of *Sytl2* gene, exon2-exon10 of *Sytl2-206* (ENSMUST00000190731.6) transcript is recommended as the knockout region.The region contains 1562bp coding sequence. Knock out the region will result in disruption of protein function.

- In this project we use CRISPR/Cas9 technology to modify *Sytl2* 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 null allele display abnormal gastric surface mucus cell morphology and reduced basal mucin secretion from gastric cells

➢ The *Sytl2* gene is located on the Chr7. 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）

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Sytl2 synaptotagmin-like 2 [Mus musculus (house mouse)]

Gene ID: 83671, updated on 8-Mar-2019

Summary

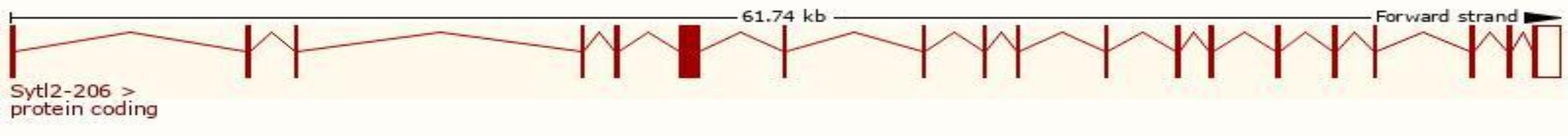
Official Symbol	Sytl2 provided by MGI
Official Full Name	synaptotagmin-like 2 provided by MGI
Primary source	MGI:MGI:1933366
See related	Ensembl:ENSMUSG00000030616
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	AI266830, Slp2, mKIAA1597
Expression	Biased expression in bladder adult (RPKM 10.4), cortex adult (RPKM 7.5) and 11 other tissues See more
Orthologs	human all

Transcript information（Ensembl）

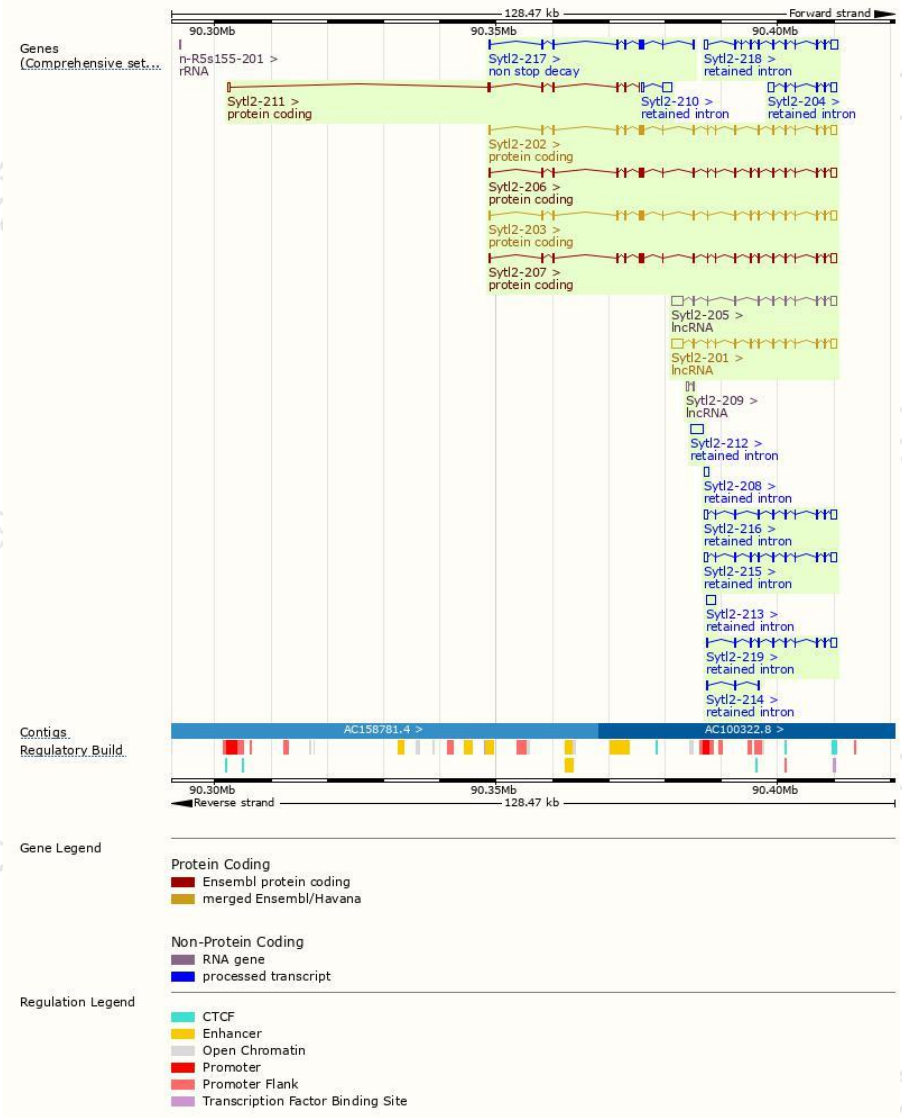
The gene has 19 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Sytl2-206	ENSMUST00000190731.6	3838	950aa	Protein coding	CCDS80750	Q99N50	TSL:1 GENCODE basic APPRIS ALT2
Sytl2-203	ENSMUST00000107211.7	3790	934aa	Protein coding	CCDS40018	Q99N50	TSL:1 GENCODE basic APPRIS P4
Sytl2-207	ENSMUST00000190837.6	3757	923aa	Protein coding	CCDS80751	Q99N50	TSL:1 GENCODE basic APPRIS ALT2
Sytl2-202	ENSMUST00000107210.2	3718	910aa	Protein coding	CCDS40017	Q99N50	TSL:1 GENCODE basic APPRIS ALT2
Sytl2-211	ENSMUST00000207578.1	1490	211aa	Protein coding	-	A0A140LHC0	CDS 3' incomplete TSL:5
Sytl2-217	ENSMUST00000208720.1	1681	529aa	Non stop decay	-	A0A140LJF2	TSL:1
Sytl2-218	ENSMUST00000208809.1	3031	No protein	Retained intron	-	-	TSL:1
Sytl2-215	ENSMUST00000208486.1	2673	No protein	Retained intron	-	-	TSL:1
Sytl2-204	ENSMUST00000189194.1	2663	No protein	Retained intron	-	-	TSL:1
Sytl2-216	ENSMUST00000208580.1	2568	No protein	Retained intron	-	-	TSL:1
Sytl2-212	ENSMUST00000207629.1	2274	No protein	Retained intron	-	-	TSL:NA
Sytl2-219	ENSMUST00000209188.1	2266	No protein	Retained intron	-	-	TSL:1
Sytl2-210	ENSMUST00000207455.1	1998	No protein	Retained intron	-	-	TSL:1
Sytl2-213	ENSMUST00000207872.1	1678	No protein	Retained intron	-	-	TSL:NA
Sytl2-208	ENSMUST00000207064.1	846	No protein	Retained intron	-	-	TSL:NA
Sytl2-214	ENSMUST00000207928.1	418	No protein	Retained intron	-	-	TSL:5
Sytl2-201	ENSMUST00000098310.8	4348	No protein	lncRNA	-	-	TSL:1
Sytl2-205	ENSMUST00000190365.6	4202	No protein	lncRNA	-	-	TSL:1
Sytl2-209	ENSMUST00000207431.1	370	No protein	lncRNA	-	-	TSL:2

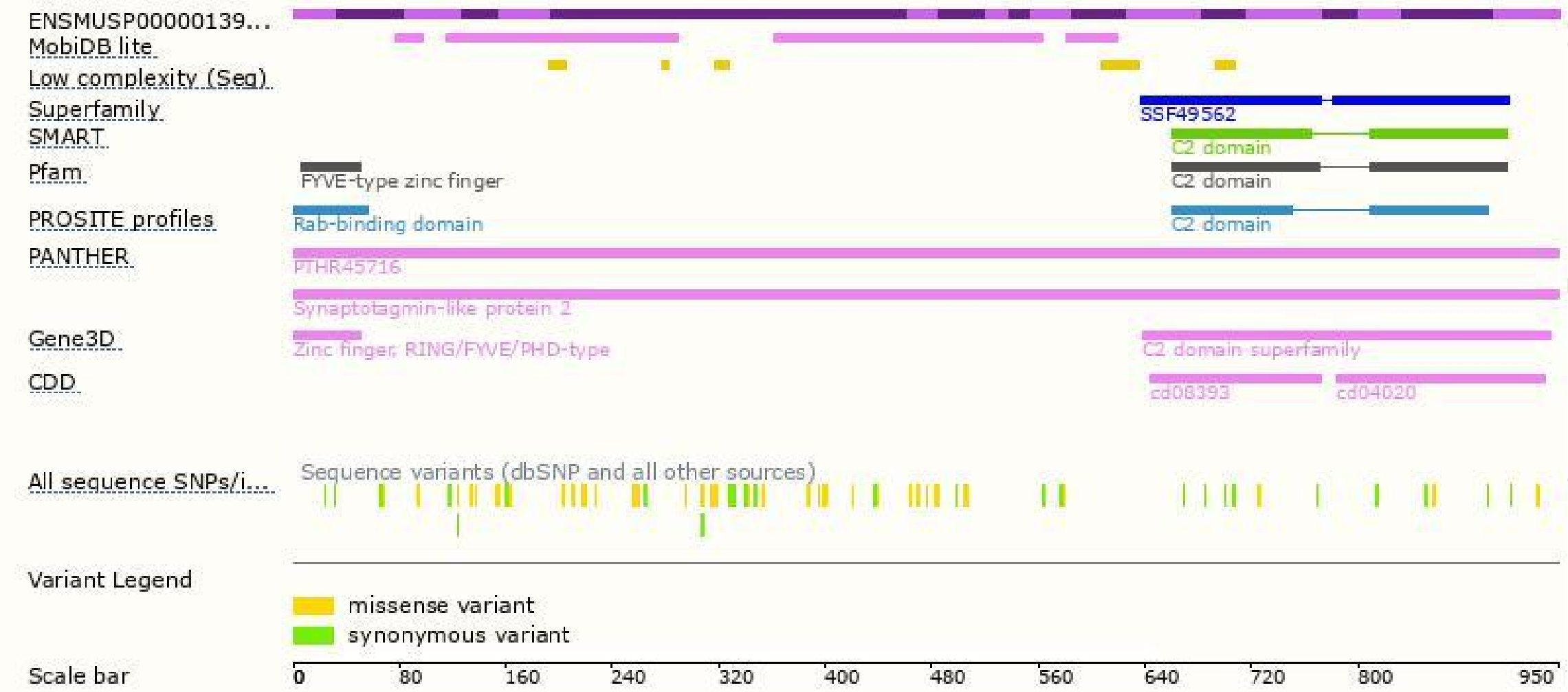
The strategy is based on the design of *Sytl2-206* transcript,The transcription is shown below



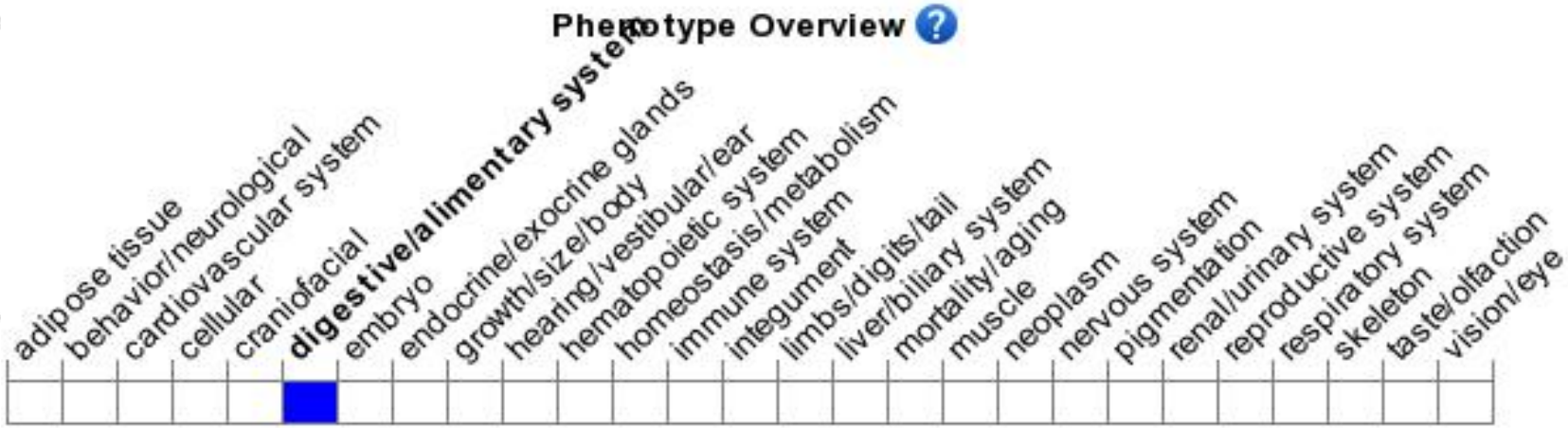
Genomic location distribution



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,Mice homozygous for a null allele display abnormal gastric surface mucus cell morphology and reduced basal mucin secretion from gastric cells

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

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