Cdon Cas9-KO Strategy

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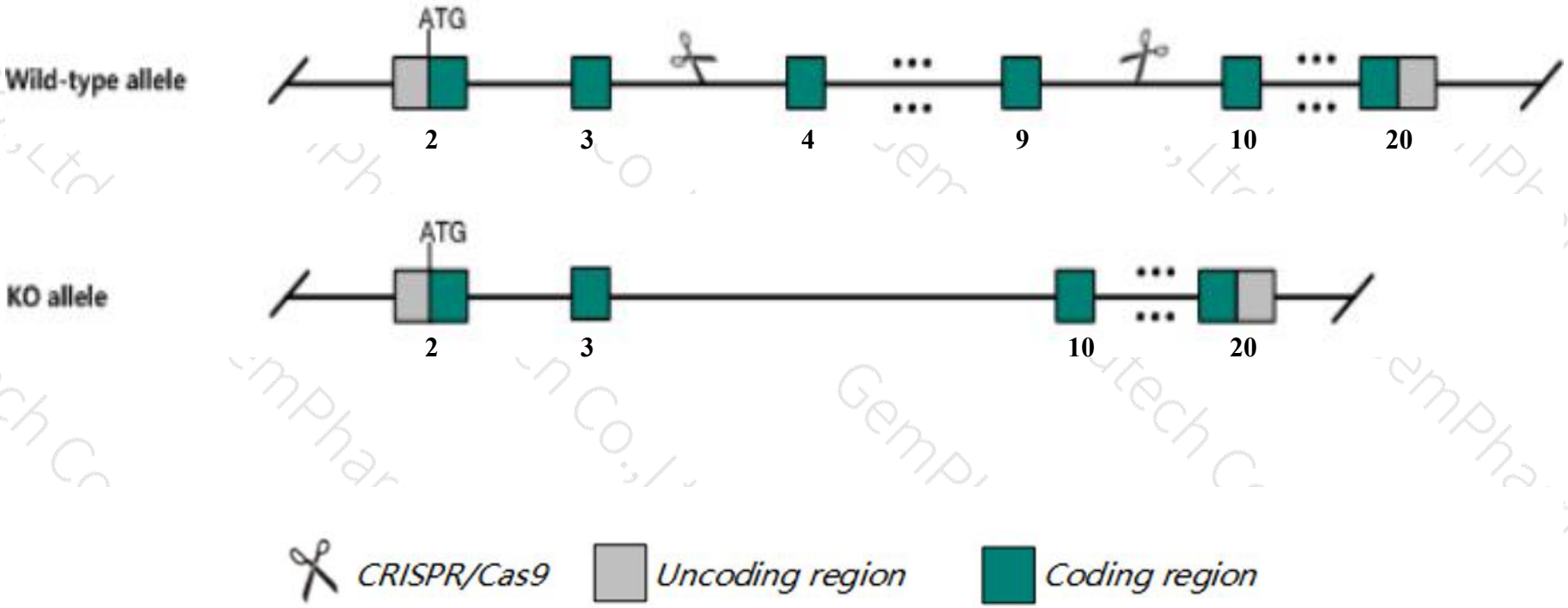
Project Overview

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

Knockout strategy

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



Technical routes

➢ The *Cdon* gene has 6 transcripts. According to the structure of *Cdon* gene, exon4-exon9 of *Cdon-202*(ENSMUST00000119129.9) transcript is recommended as the knockout region.The region contains 1493bp coding sequence. Knock out the region will result in disruption of protein function.

➢ In this project we use CRISPR/Cas9 technology to modify *Cdon* gene. The brief process is as follows: CRISPR/Cas9 system 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 null mice display facial defects characteristic of microform holoprosencephaly, are runted, and are prone to death prior to weaning.

➢ The knockout region is near to the C-terminal of *Gm25630* gene,this strategy may influence the regulatory function of the C-terminal of *Gm25630* gene.

➢ The *Cdon* gene is located on the Chr9. 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 the gene knockout on gene transcription, RNA splicing and protein translation cannot be predicted at the existing technology level.

Gene information（NCBI）

Cdon cell adhesion molecule-related/down-regulated by oncogenes [Mus musculus (house mouse)]

Gene ID: 57810, updated on 13-Mar-2020

Summary

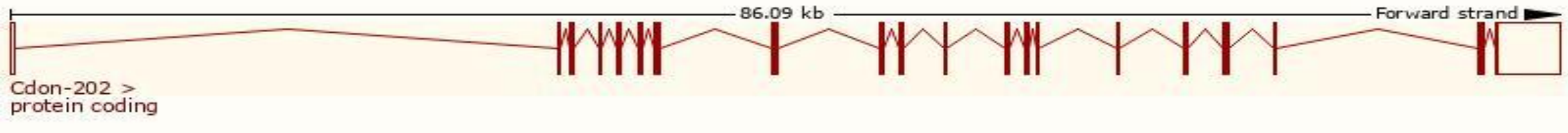
Official Symbol	Cdon provided by MGI
Official Full Name	cell adhesion molecule-related/down-regulated by oncogenes provided byMGI
Primary source	MGI:MGI:1926387
See related	Ensembl:ENSMUSG00000038119
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	CDO, Cd0, Orcam
Expression	Broad expression in limb E14.5 (RPKM 17.8), CNS E14 (RPKM 6.4) and 16 other tissuesSee more
Orthologs	human all

Transcript information（Ensembl）

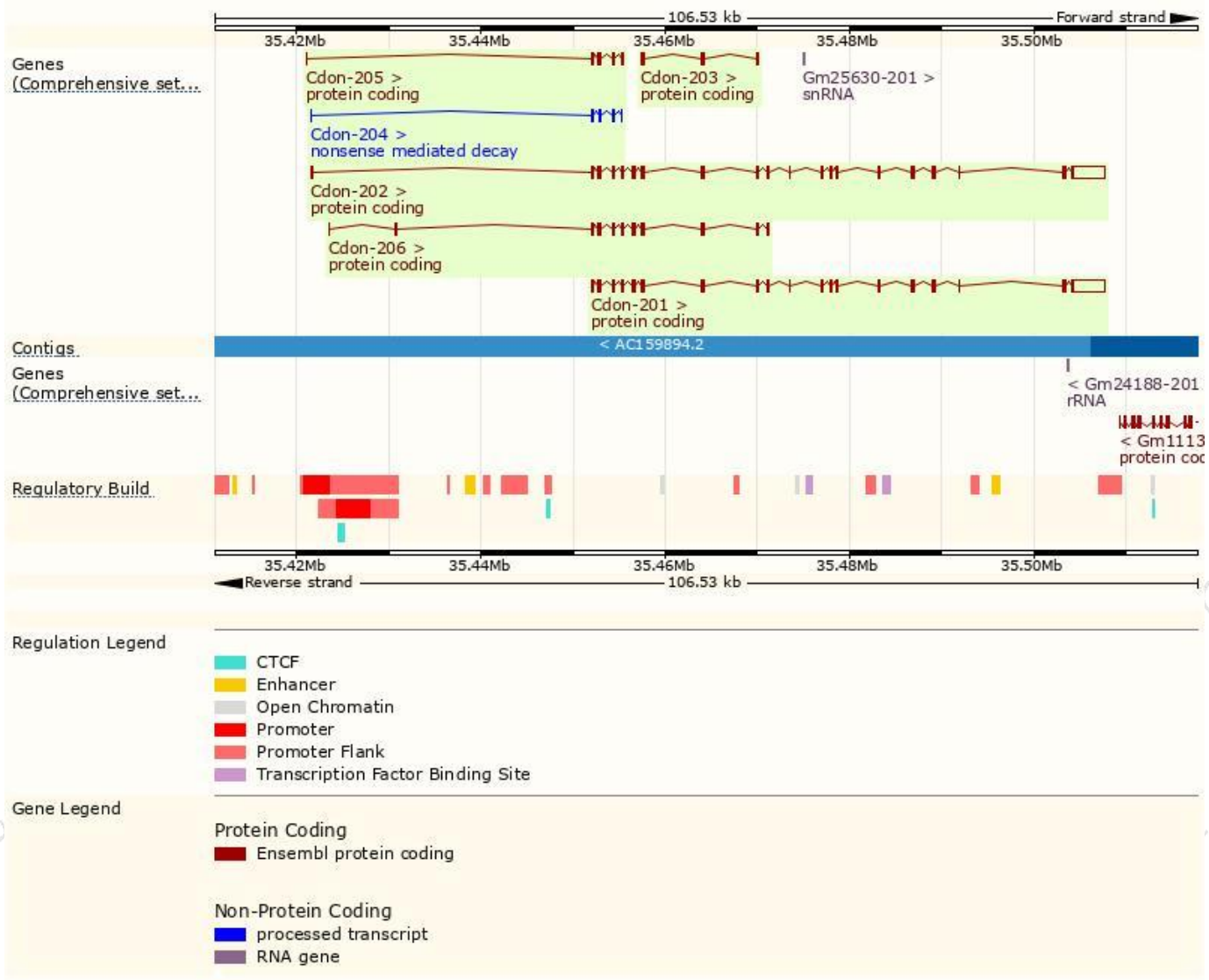
The gene has 6 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Cdon-202	ENSMUST00000119129.9	7503	1250aa	Protein coding	CCDS22964	Q32MD9	TSL:5 GENCODE basic APPRIS P1
Cdon-201	ENSMUST00000042842.5	7213	1250aa	Protein coding	CCDS22964	Q32MD9	TSL:1 GENCODE basic APPRIS P1
Cdon-206	ENSMUST00000154652.7	2222	670aa	Protein coding	-	Q3TZM7	CDS 3' incomplete TSL:1
Cdon-203	ENSMUST00000127264.1	653	218aa	Protein coding	-	F6SDC3	CDS 5' and 3' incomplete TSL:3
Cdon-205	ENSMUST00000151682.7	652	178aa	Protein coding	-	D3Z2P1	CDS 3' incomplete TSL:5
Cdon-204	ENSMUST00000137200.8	408	47aa	Nonsense mediated decay	-	D6RHA1	TSL:5

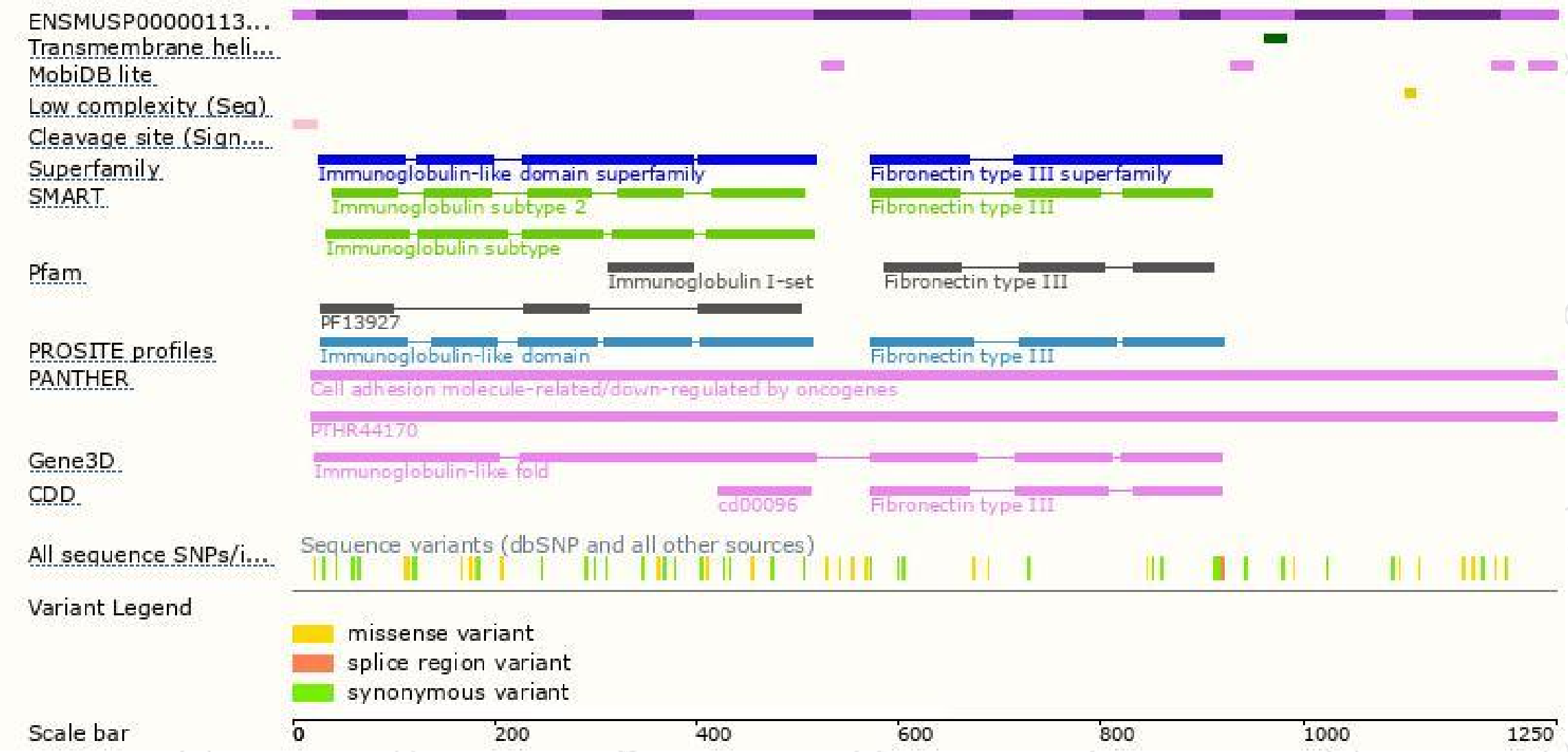
The strategy is based on the design of *Cdon-202* transcript,the transcription is shown below:



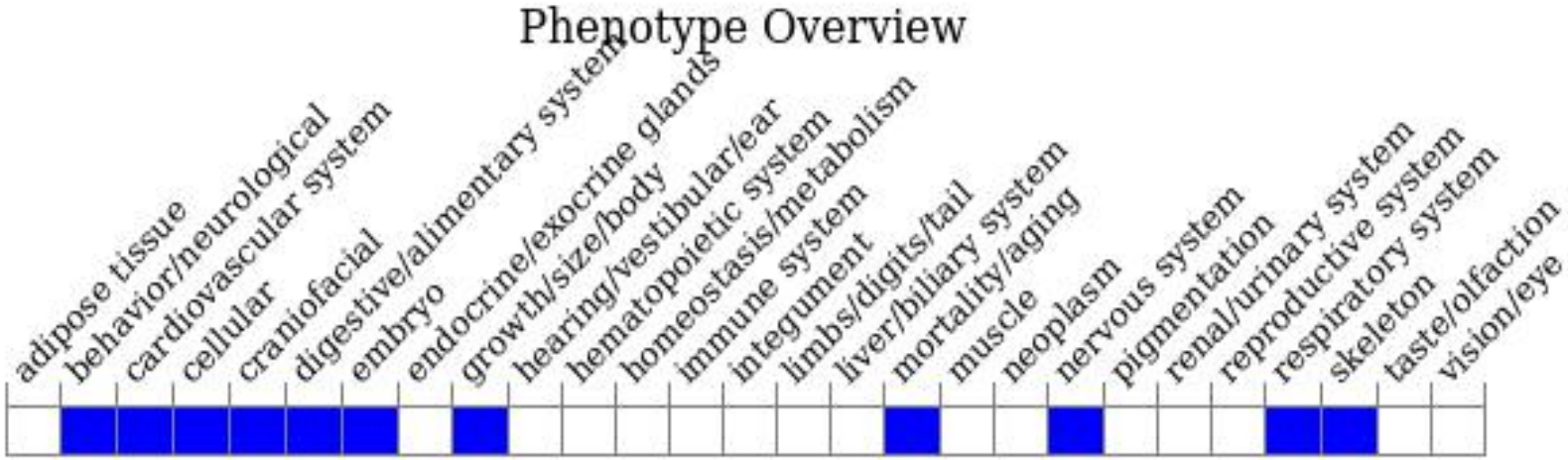
Genomic location distribution



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 null mice display facial defects characteristic of microform holoprosencephaly, are runted, and are prone to death prior to weaning.

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

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