Pcdh19 Cas9-CKO Strategy

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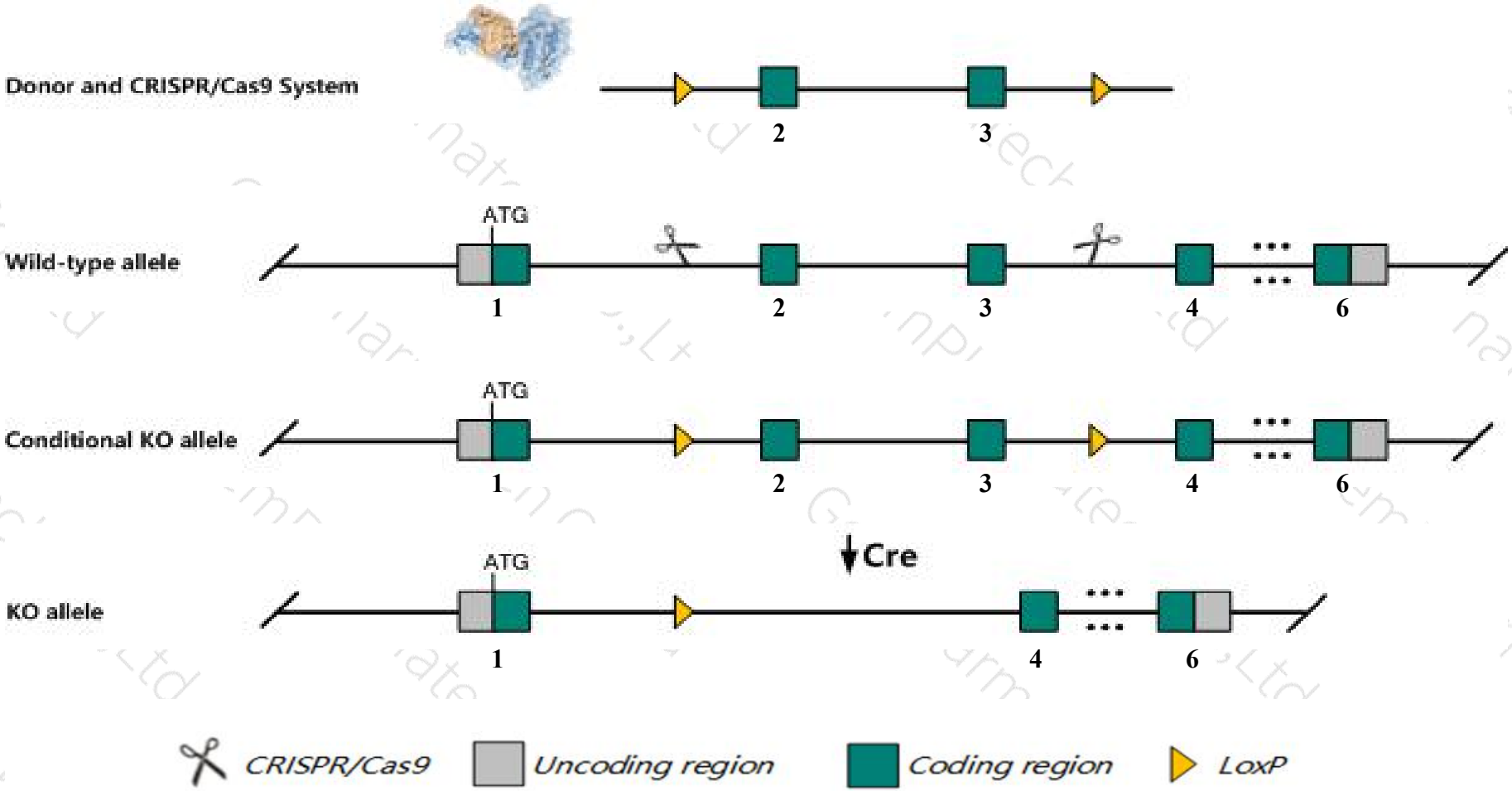
Project Overview

Project Name	***Pcdh19***
Project type	**Cas9-CKO**
Strain background	**C57BL/6JGpt**

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Pcdh19* gene. The schematic diagram is as follows:



Technical routes

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- The *Pcdh19* gene has 5 transcripts. According to the structure of *Pcdh19* gene, exon2-exon3 of *Pcdh19-202* (ENSMUST00000149154.7) 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 *Pcdh19* 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,female mice heterozygous for a null mutation display abnormal electrocorticograms and distinct clusters of null and wild-type cells in the brain.

- The *Pcdh19* gene is located on the ChrX. 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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Pcdh19 protocadherin 19 [*Mus musculus* (house mouse)]

Gene ID: 279653, updated on 13-Jan-2020

Summary

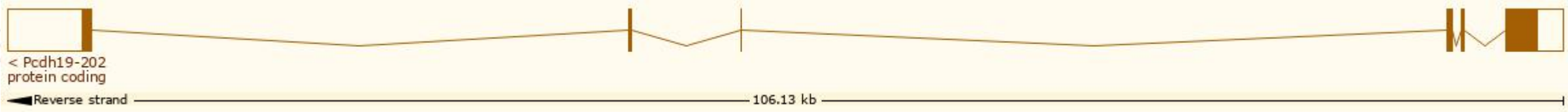
Official Symbol	Pcdh19 provided by MGI
Official Full Name	protocadherin 19 provided by MGI
Primary source	MGI:MGI:2685563
See related	Ensembl:ENSMUSG00000051323
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	Gm717; mKIAA1313; B530002L05Rik
Expression	Broad expression in CNS E18 (RPKM 6.9), whole brain E14.5 (RPKM 4.8) and 15 other tissues See more
Orthologs	human all

Transcript information（Ensembl）

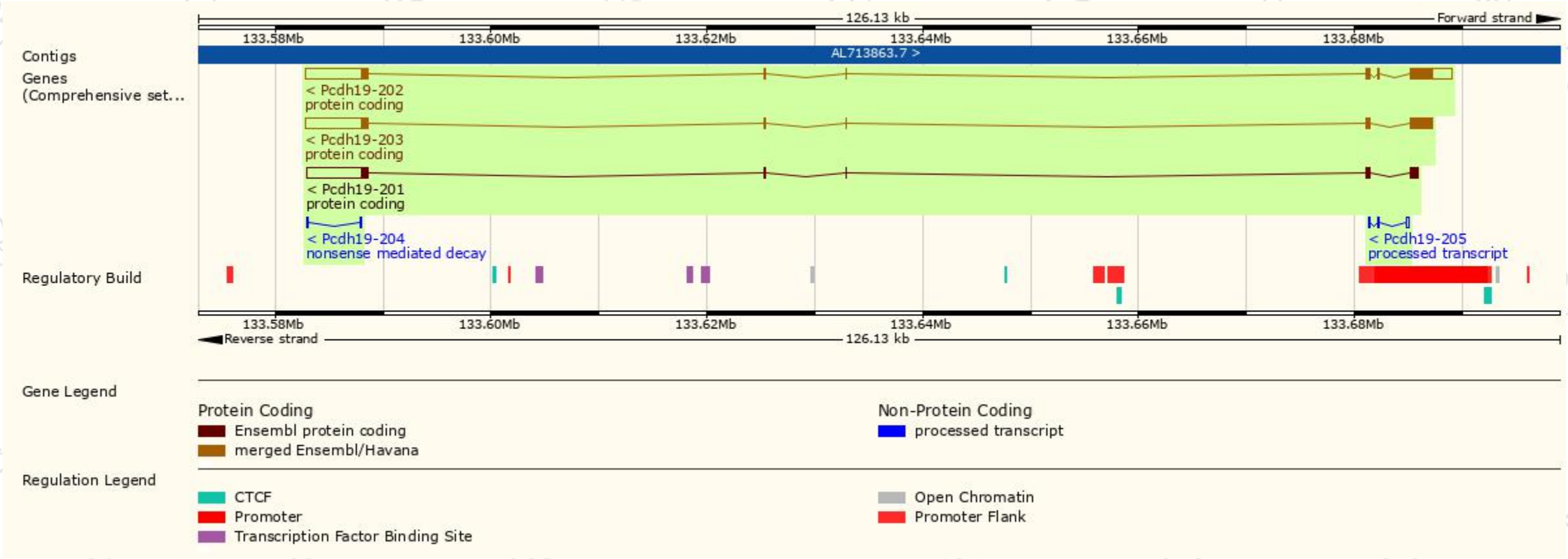
The gene has 5 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Pcdh19-202	ENSMUST00000149154.7	10289	1145aa	Protein coding	CCDS41117	Q80TF3	TSL:1 GENCODE basic APPRIS P3
Pcdh19-203	ENSMUST00000167944.7	8407	1097aa	Protein coding	CCDS53181	E9Q5E1	TSL:5 GENCODE basic APPRIS ALT1
Pcdh19-201	ENSMUST00000060309.9	7035	641aa	Protein coding	-	A2AGW4	CDS 5' incomplete TSL:5
Pcdh19-205	ENSMUST00000193485.1	405	No protein	Processed transcript	-	-	TSL:3
Pcdh19-204	ENSMUST00000193376.1	335	7aa	Nonsense mediated decay	-	A0A1Y7VLJ9	CDS 5' incomplete TSL:5

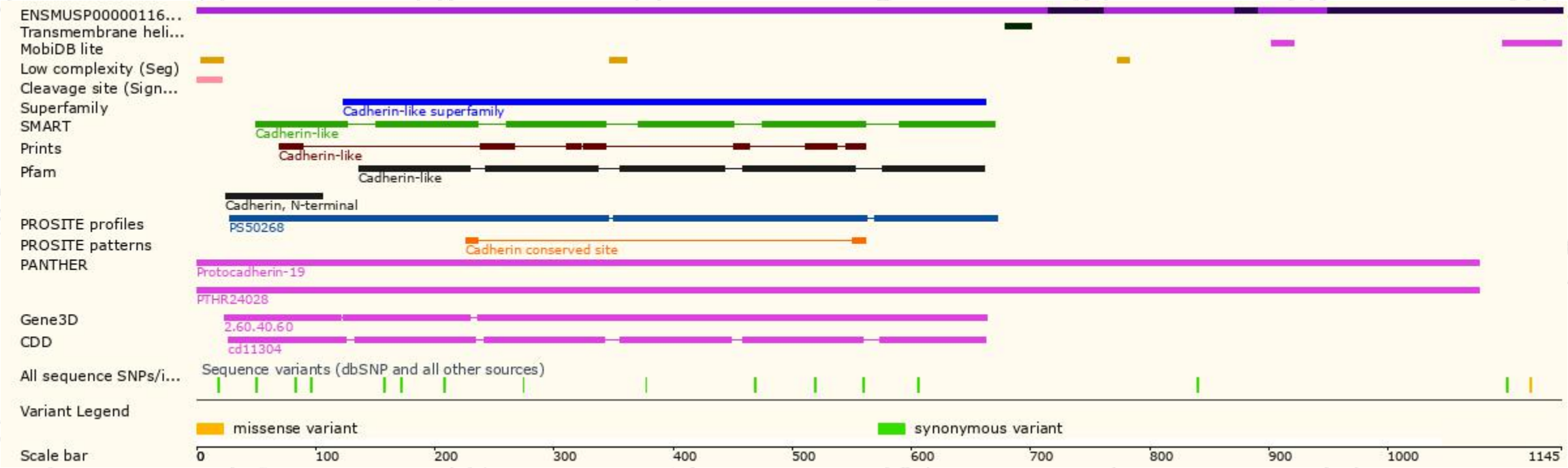
The strategy is based on the design of *Pcdh19-202* transcript, the transcription is shown below:



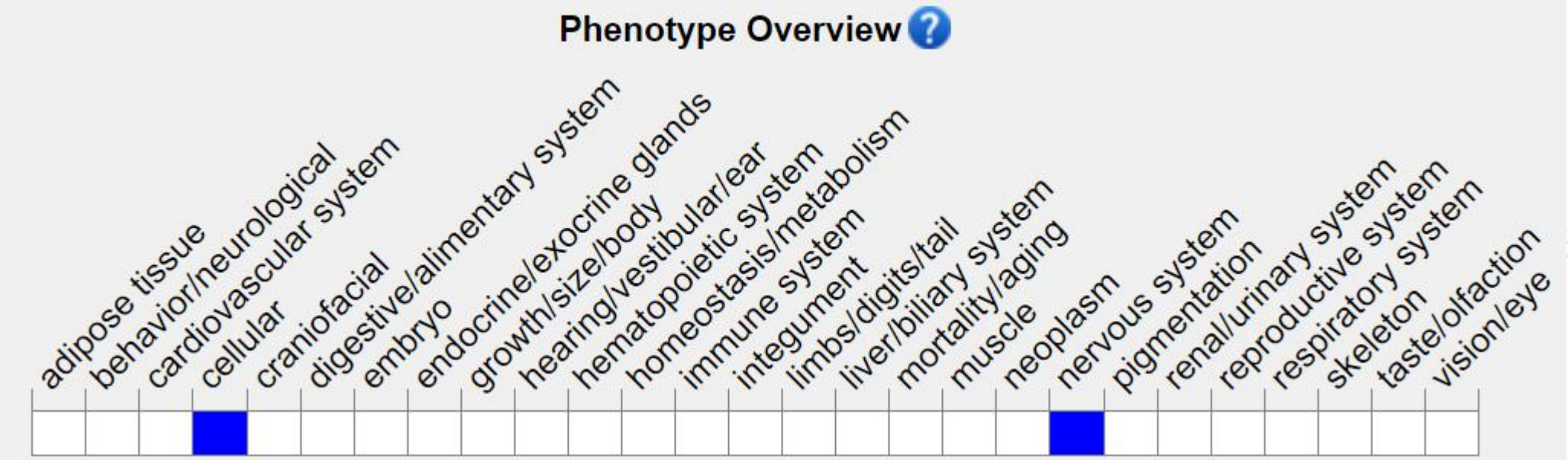
Genomic location distribution



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,female mice heterozygous for a null mutation display abnormal electrocorticograms and distinct clusters of null and wild-type cells in the brain.

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

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