

Manba Cas9-CKO Strategy

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Project Overview

Project Name

Manba

Project type

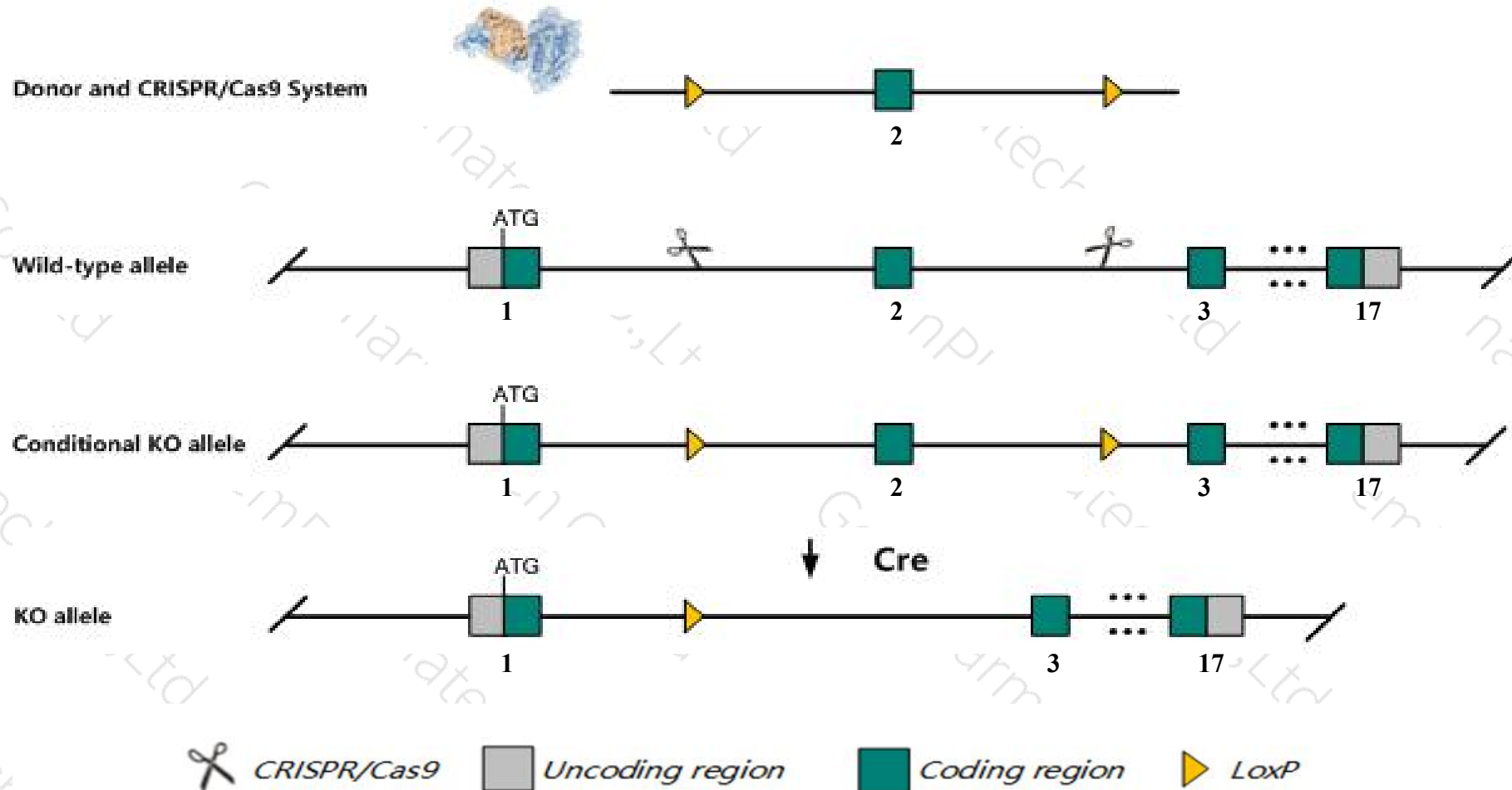
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

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



- The *Manba* gene has 11 transcripts. According to the structure of *Manba* gene, exon2 of *Manba-201* (ENSMUST00000029814.9) transcript is recommended as the knockout region. The region contains 95bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Manba* 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.

- According to the existing MGI data, Homozygous mutation results in no dysmorphology or overt neurological problems. Homozygotes show no beta-mannosidase activity and display consistent cytoplasmic vacuolation in the central nervous system and minimal vacuolation in most visceral organs.
- Transcript *Manba*-202&203&205&207&210&211 may not be affected.
- The *Manba* gene is located on the Chr3. 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)

Manba mannosidase, beta A, lysosomal [*Mus musculus* (house mouse)]

Gene ID: 110173, updated on 10-Oct-2019

Summary

- Official Symbol** Manba provided by [MGI](#)
- Official Full Name** mannosidase, beta A, lysosomal provided by [MGI](#)
- Primary source** [MGI:88175](#)
- See related** [Ensembl:ENSMUSG00000028164](#)
- 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** Bmn; 2410030O07Rik; B930014J03Rik
- Expression** Ubiquitous expression in placenta adult (RPKM 10.2), kidney adult (RPKM 8.8) and 28 other tissues [See more](#)
- Orthologs** [human](#) [all](#)

Genomic context

Location: 3 G3; 3 62.65 cM See Manba in [Genome Data Viewer](#)

Exon count: 19

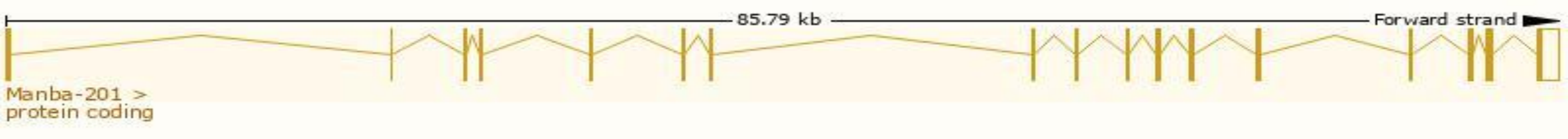
Annotation release	Status	Assembly	Chr	Location
108	current	GRCm38.p6 (GCF_000001635.26)	3	NC_000069.6 (135485611..135571404)
Build 37.2	previous assembly	MGSCv37 (GCF_000001635.18)	3	NC_000069.5 (135148575..135234368)

Transcript information (Ensembl)

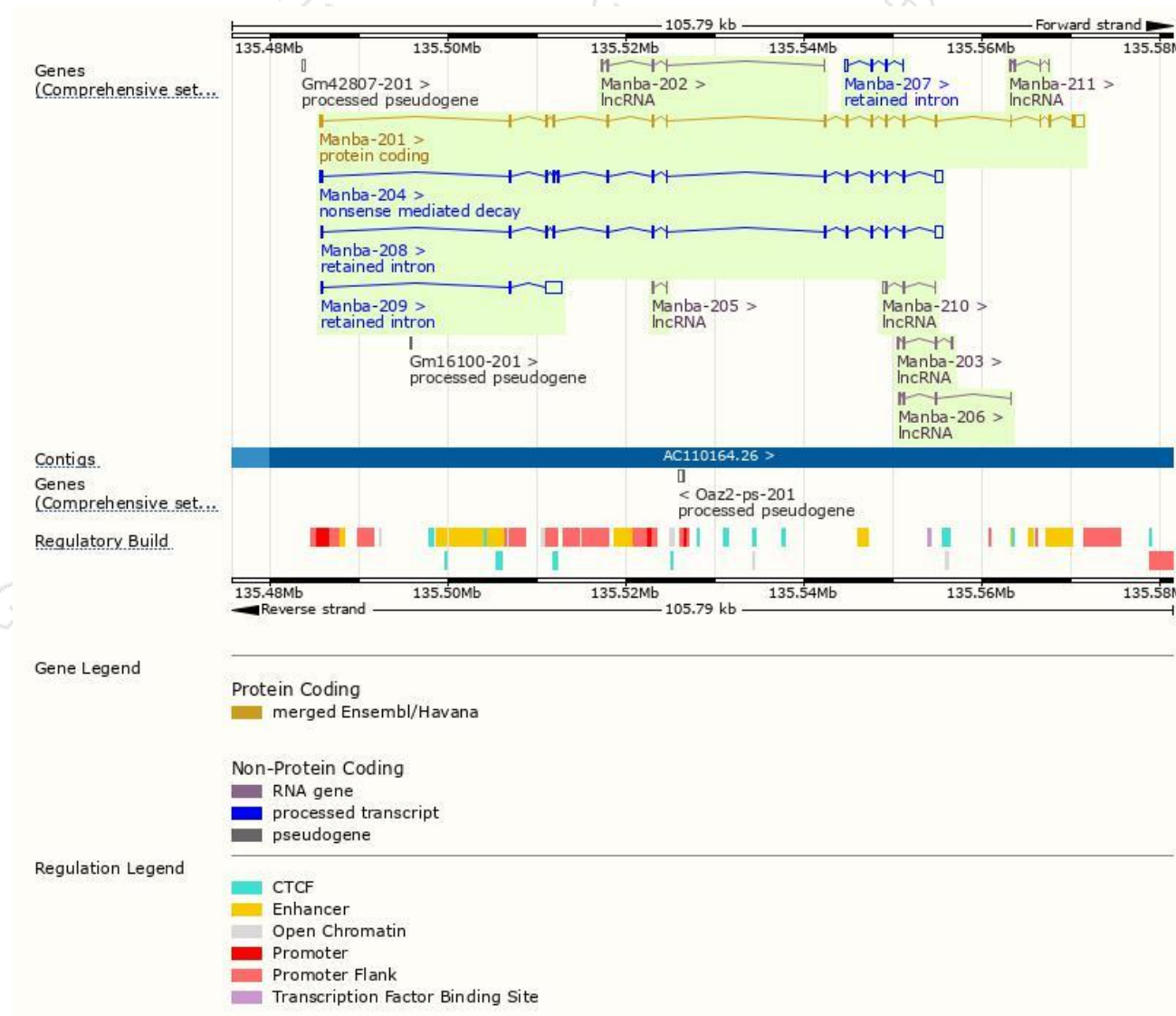
The gene has 11 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Manba-201	ENSMUST00000029814.9	3675	879aa	Protein coding	CCDS17857	A0A0R4J092	TSL:1 GENCODE basic APPRIS P1
Manba-204	ENSMUST00000131610.7	2683	186aa	Nonsense mediated decay	-	D6RGR1	TSL:1
Manba-208	ENSMUST00000140893.7	2534	No protein	Retained intron	-	-	TSL:1
Manba-209	ENSMUST00000144654.1	2183	No protein	Retained intron	-	-	TSL:1
Manba-207	ENSMUST00000140496.7	535	No protein	Retained intron	-	-	TSL:2
Manba-202	ENSMUST00000123061.1	638	No protein	lncRNA	-	-	TSL:5
Manba-203	ENSMUST00000130147.7	634	No protein	lncRNA	-	-	TSL:3
Manba-210	ENSMUST00000147872.7	604	No protein	lncRNA	-	-	TSL:5
Manba-206	ENSMUST00000134478.1	599	No protein	lncRNA	-	-	TSL:3
Manba-211	ENSMUST00000153412.1	511	No protein	lncRNA	-	-	TSL:3
Manba-205	ENSMUST00000134095.1	276	No protein	lncRNA	-	-	TSL:3

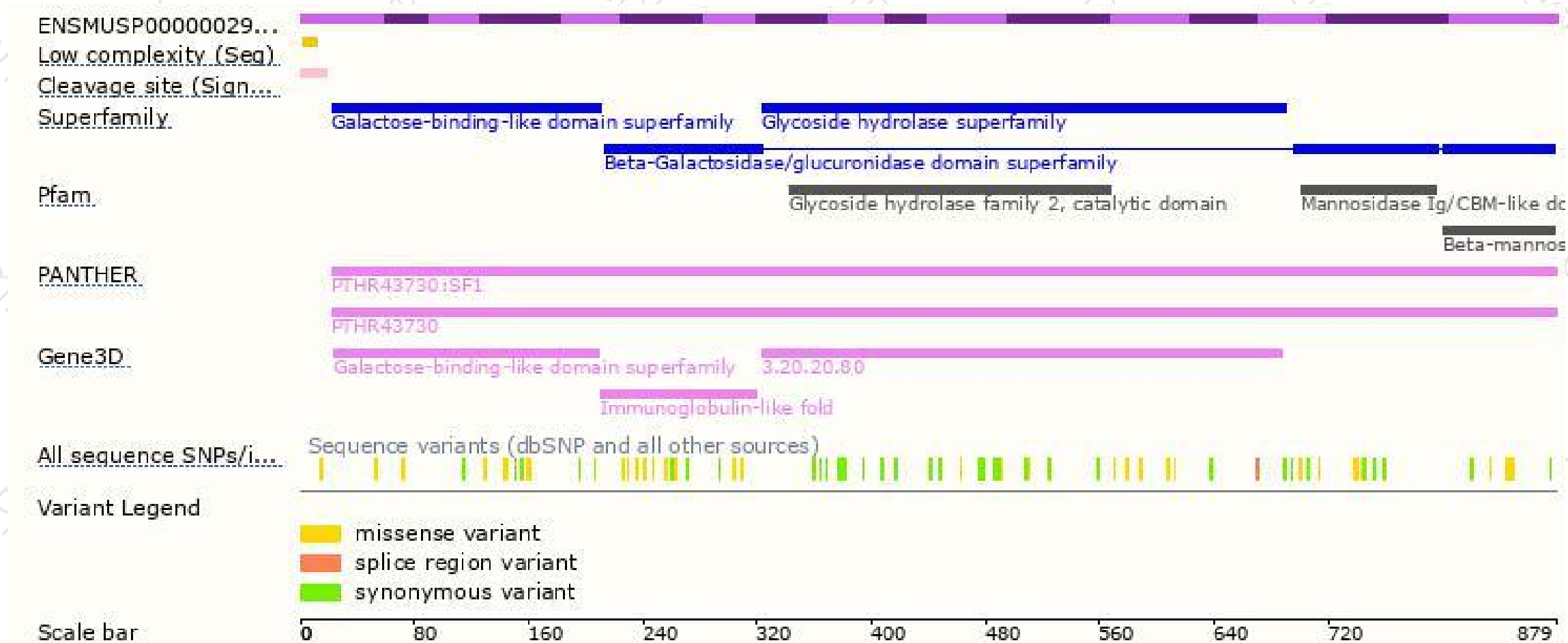
The strategy is based on the design of *Manba-201* transcript,The transcription is shown below



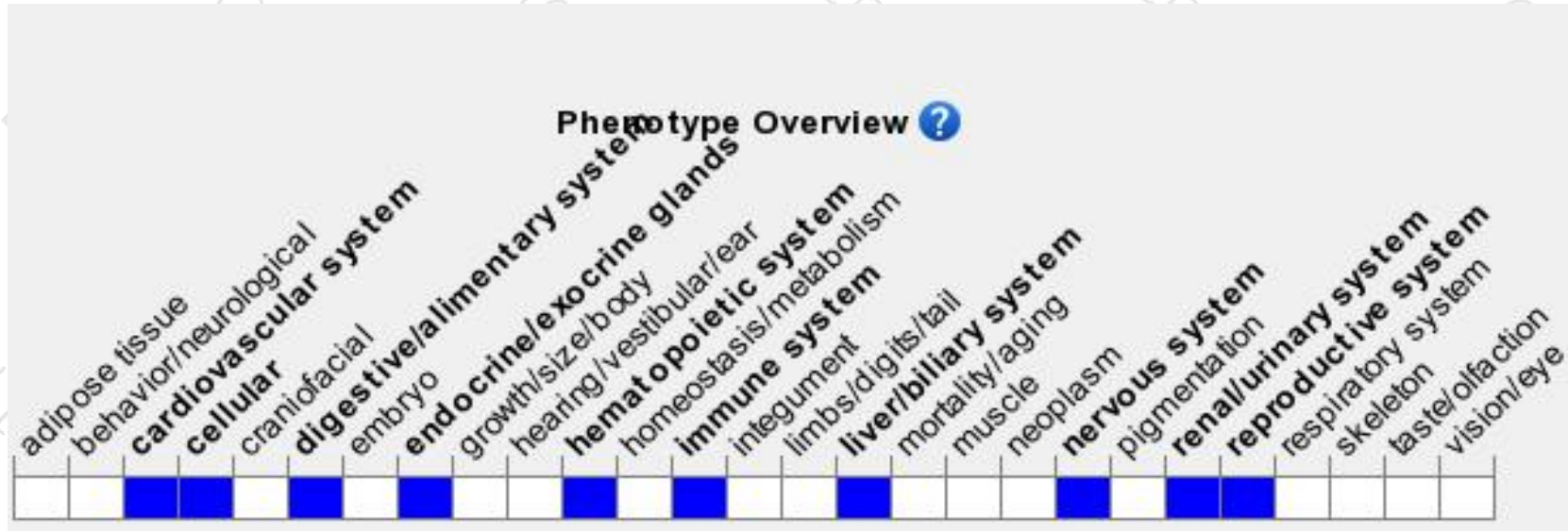
Genomic location distribution



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 mutation results in no dysmorphology or overt neurological problems.

Homozygotes show no beta-mannosidase activity and display consistent cytoplasmic vacuolation in the central nervous system and minimal vacuolation in most visceral organs.

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

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