

Npy5r Cas9-CKO Strategy

Designer:

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Project Overview

Project Name

Npy5r

Project type

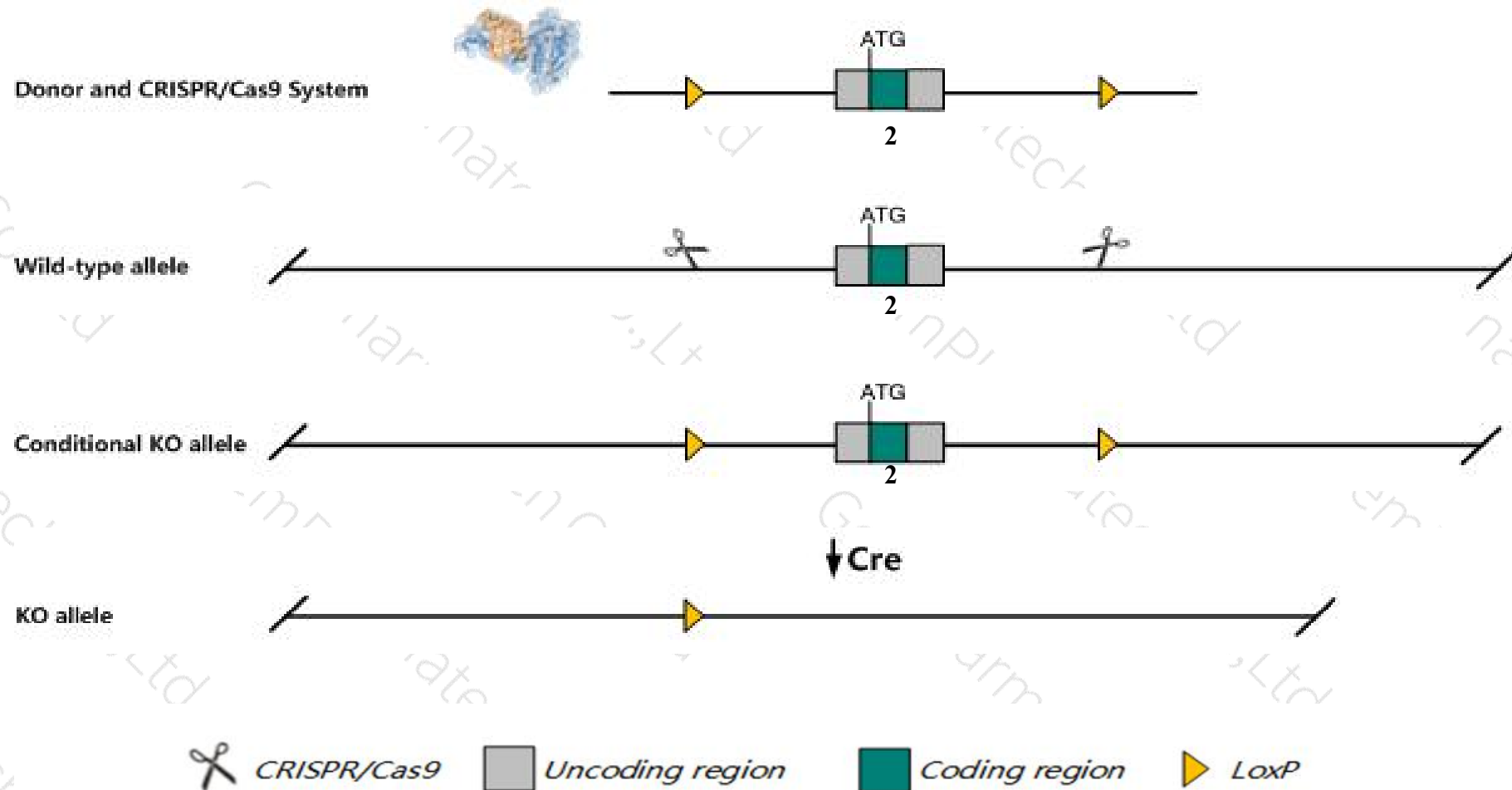
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Npy5r* gene. The schematic diagram is as follows:



Technical routes

- The *Npy5r* gene has 3 transcripts. According to the structure of *Npy5r* gene, exon2 of *Npy5r-201* (ENSMUST00000070810.7) transcript is recommended as the knockout region. The region contains all of the coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Npy5r* 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, Homozygotes for a null allele show increased susceptibility to diet-induced obesity and a reduced orexigenic response to select agonists. Homozygotes for a reporter allele show mild late-onset obesity, increased adiposity, polyphagia, and exacerbated obesity parameters after chronic NPY infusion.
- The *Npy5r* gene is located on the Chr8. 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)

Npy5r neuropeptide Y receptor Y5 [Mus musculus (house mouse)]

Gene ID: 18168, updated on 31-Jan-2019

Summary



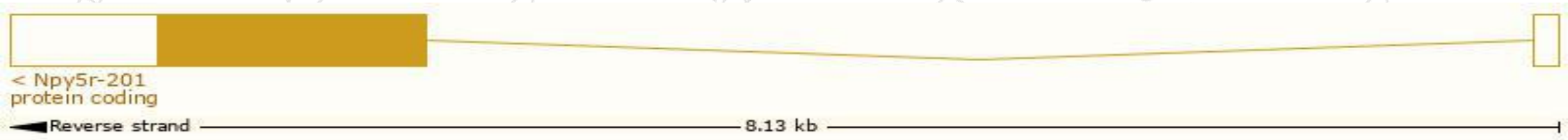
Official Symbol	Npy5r provided by MGI
Official Full Name	neuropeptide Y receptor Y5 provided by MGI
Primary source	MGI:MGI:108082
See related	Ensembl:ENSMUSG00000044014
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	NPY5-R, NPYY5-R, Y5R
Expression	Biased expression in cortex adult (RPKM 1.1), frontal lobe adult (RPKM 1.0) and 5 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

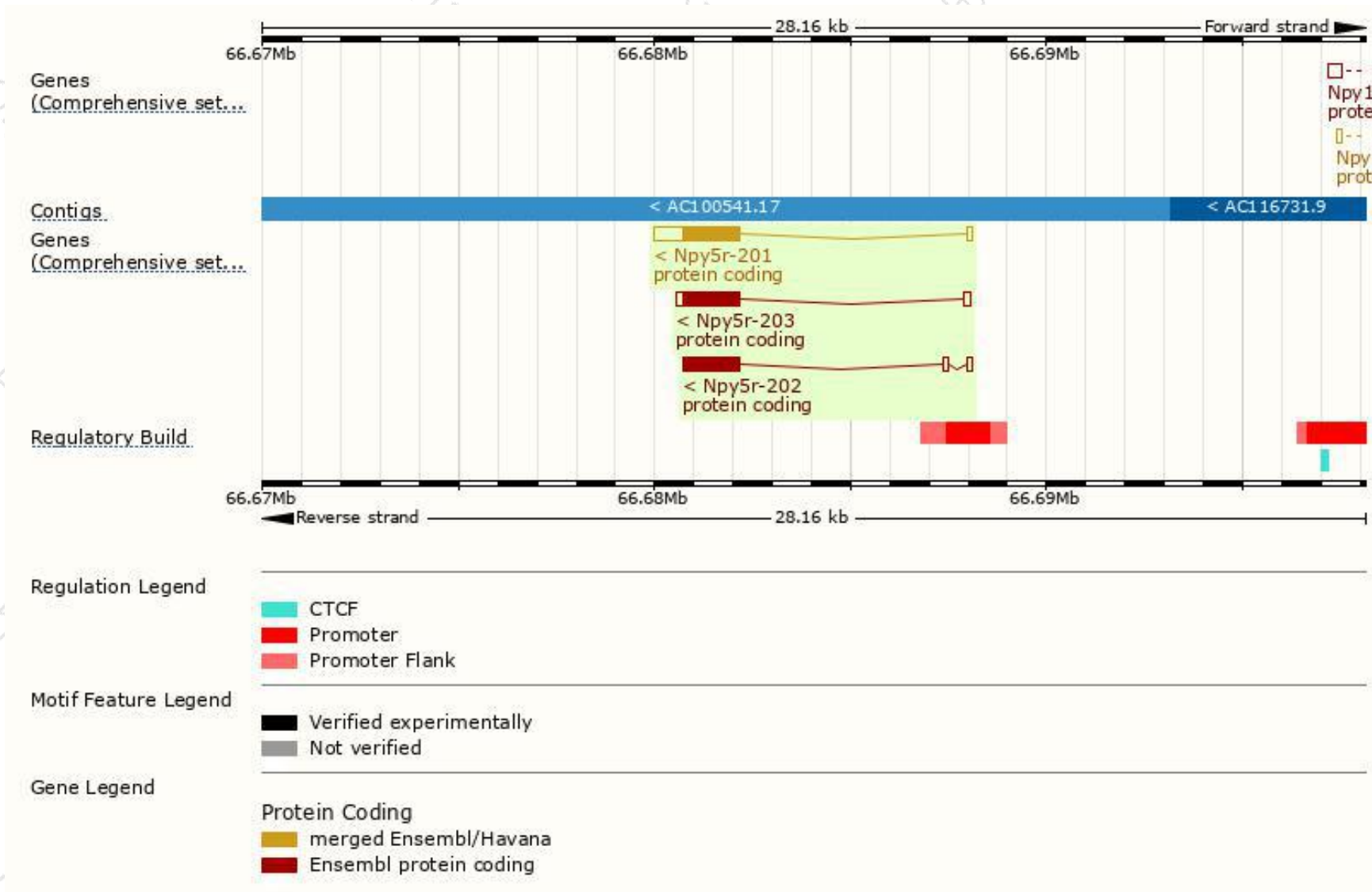
The gene has 3 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Npy5r-201	ENSMUST00000070810.7	2314	466aa	Protein coding	CCDS22335	Q70342 Q543U8	TSL:1 GENCODE basic APPRIS P1
Npy5r-203	ENSMUST00000212563.1	1747	466aa	Protein coding	CCDS22335	Q70342 Q543U8	TSL:1 GENCODE basic APPRIS P1
Npy5r-202	ENSMUST00000211920.1	1715	466aa	Protein coding	CCDS22335	Q70342 Q543U8	TSL:5 GENCODE basic APPRIS P1

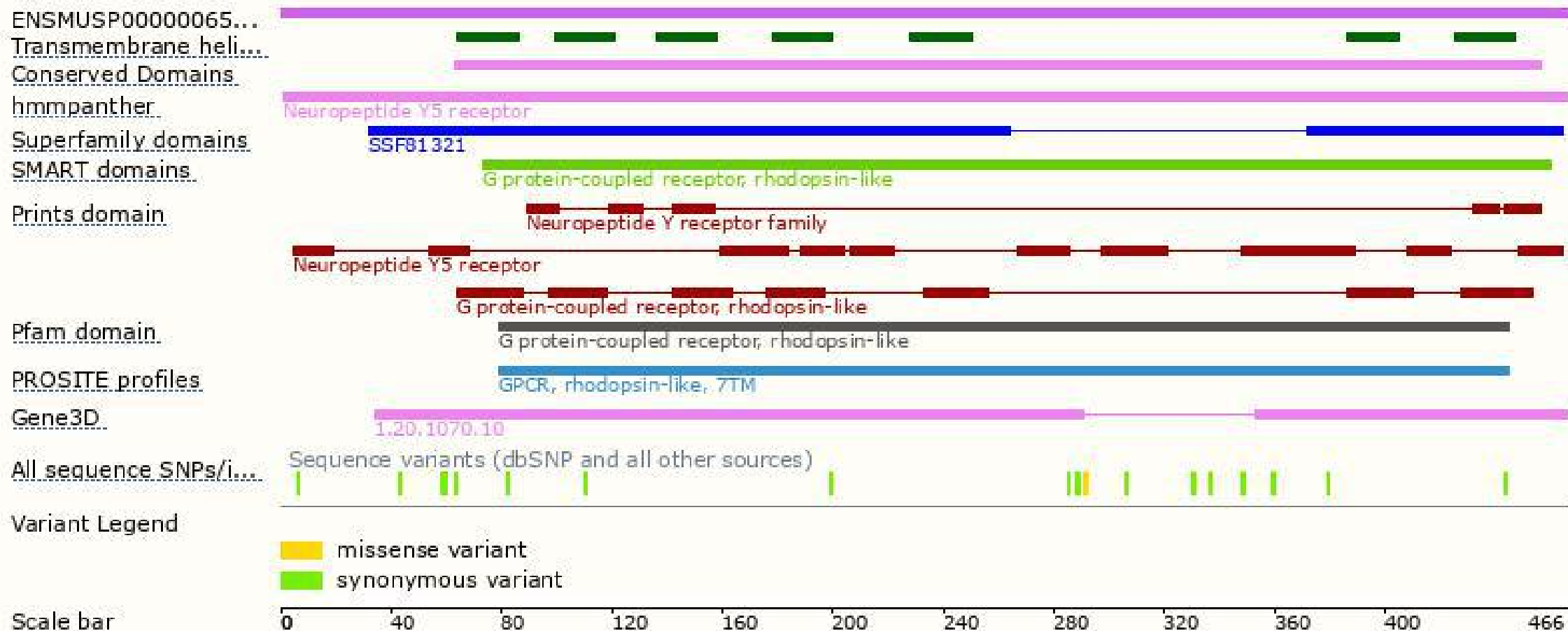
The strategy is based on the design of *Npy5r-201* transcript,The transcription is shown below



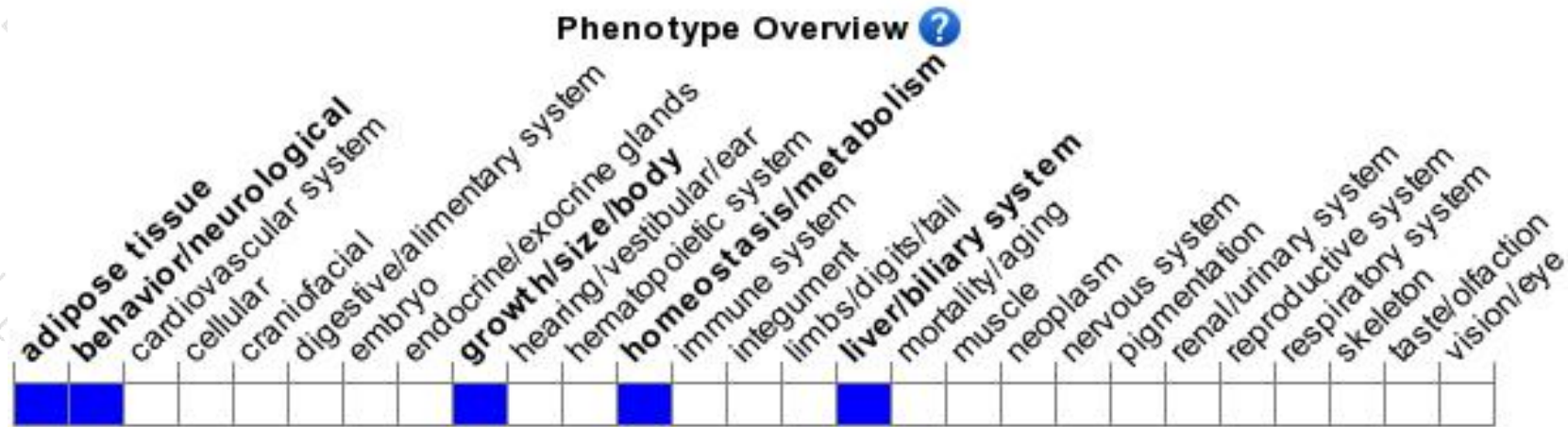
Genomic location distribution



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 a null allele show increased susceptibility to diet-induced obesity and a reduced orexigenic response to select agonists. Homozygotes for a reporter allele show mild late-onset obesity, increased adiposity, polyphagia, and exacerbated obesity parameters after chronic NPY infusion.

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

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