

***IL10* Cas9-CKO Strategy**

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Design Date: 2019-08-06

Project Overview

Project Name

IL10

Project type

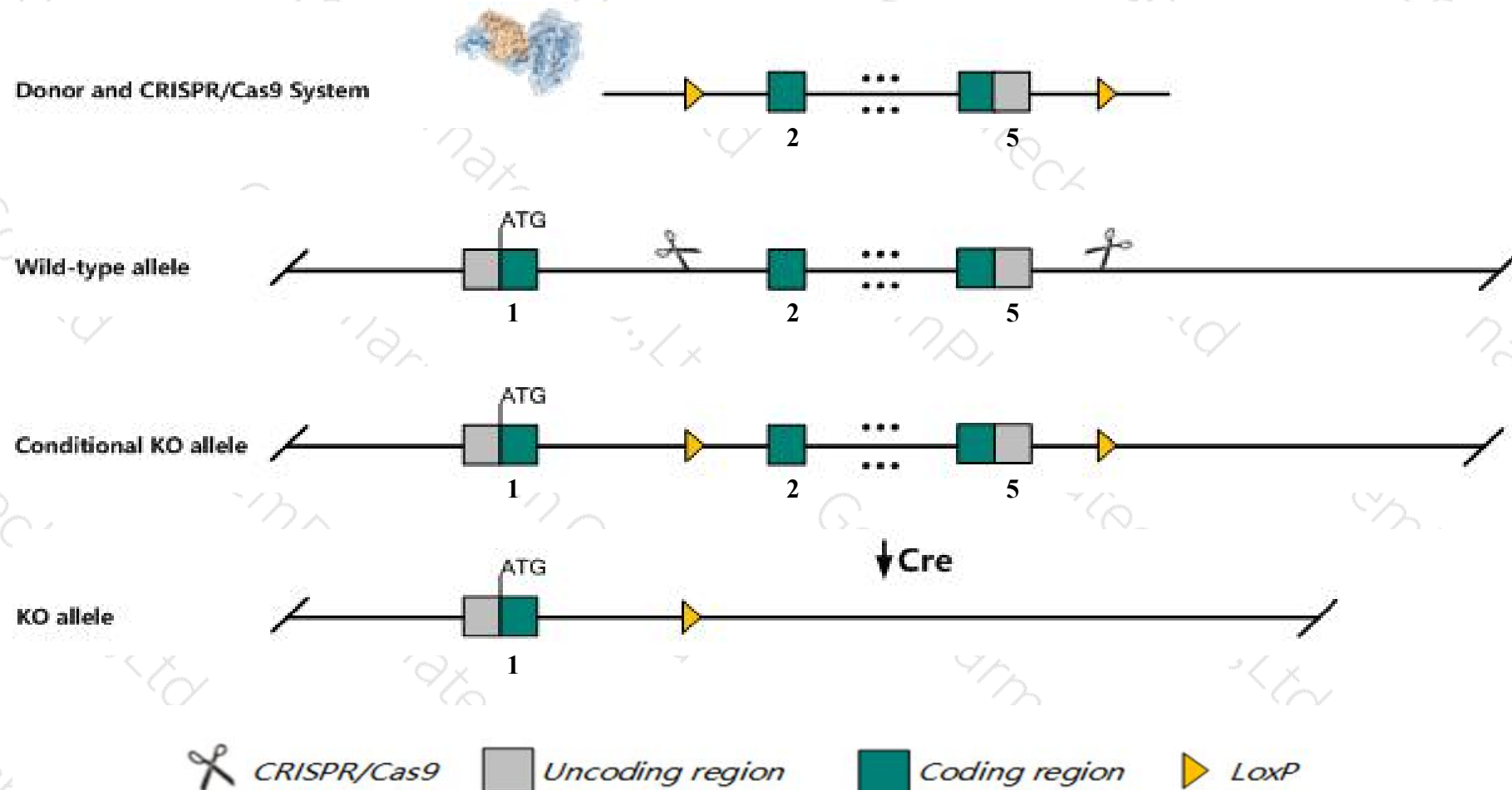
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Il10* gene. The schematic diagram is as follows:



Technical routes

- The *Il10* gene has 1 transcript. According to the structure of *Il10* gene, exon2-exon5 of *Il10-201* (ENSMUST00000016673.5) transcript is recommended as the knockout region. The region contains most 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 *Il10* 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 targeted null mutation exhibit retarded growth, anemia, chronic enterocolitis, a high incidence of colorectal adenocarcinomas, and altered responses to various infectious organisms such as *Mycobacterium bovis* and *Leishmania donovani*.
- The *Il10* gene is located on the Chr1. 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)

Il10 interleukin 10 [Mus musculus (house mouse)]

Gene ID: 16153, updated on 9-Apr-2019

Summary



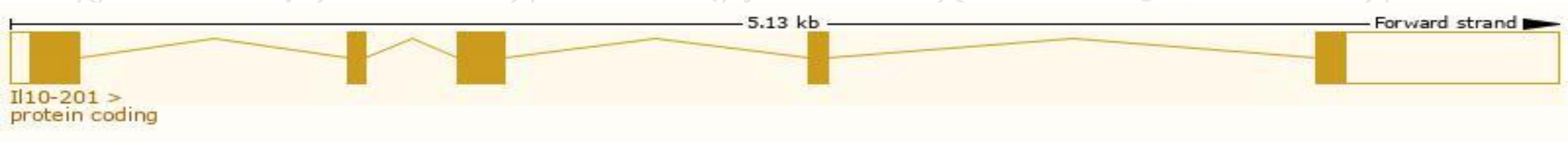
Official Symbol	Il10 provided by MGI
Official Full Name	interleukin 10 provided by MGI
Primary source	MGI:MGI:96537
See related	Ensembl:ENSMUSG00000016529
Gene type	protein coding
RefSeq status	REVIEWED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	CSIF, Il-10
Summary	This gene encodes an anti-inflammatory cytokine that is a member of the class-2 cytokine family. The encoded protein is secreted by cells of both the innate and adaptive immune systems and is crucial for limiting the immune response to a broad range of pathogens. It also has been shown to suppress autoimmune responses. This protein mediates it's immunosuppressive signal through a specific interleukin 10 receptor complex. Aberrant functioning of this gene is associated with numerous immune disorders including graft-versus-host disease, and increased susceptibility to HIV-1 infection and rheumatoid arthritis. [provided by RefSeq, Sep 2015]
Expression	Low expression observed in reference dataset See more
Orthologs	human all

Transcript information (Ensembl)

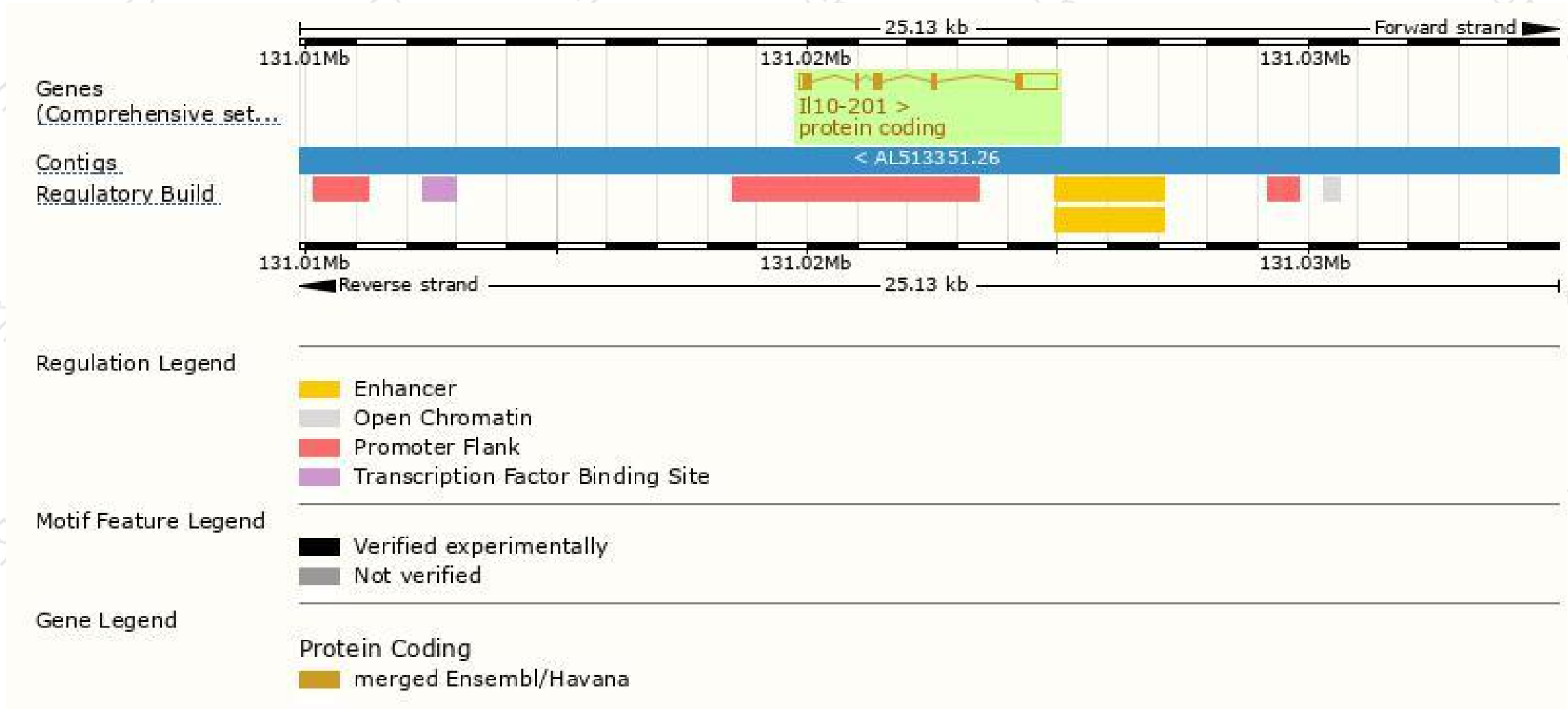
The gene has 1 transcript, and the transcript is shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Il10-201	ENSMUST00000016673.5	1310	178aa	Protein coding	CCDS15265	P18893	TSL:1 GENCODE basic APPRIS P1

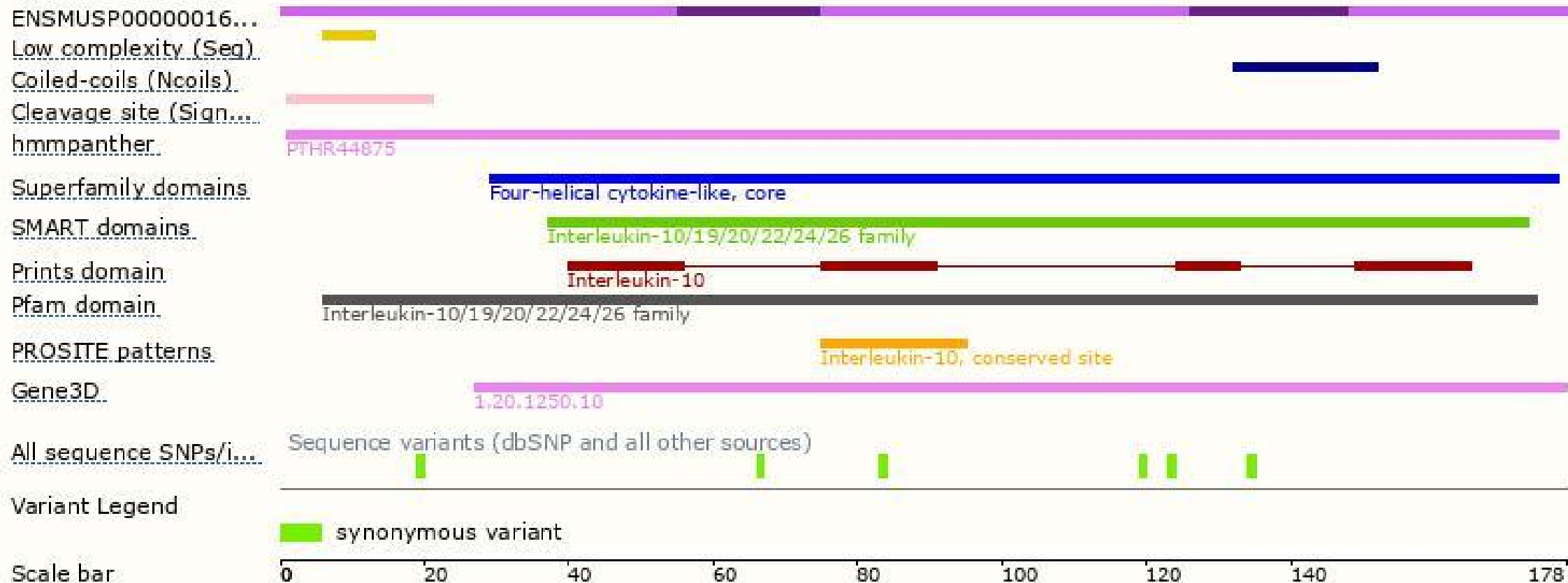
The strategy is based on the design of *Il10-201* transcript, The transcription is shown below



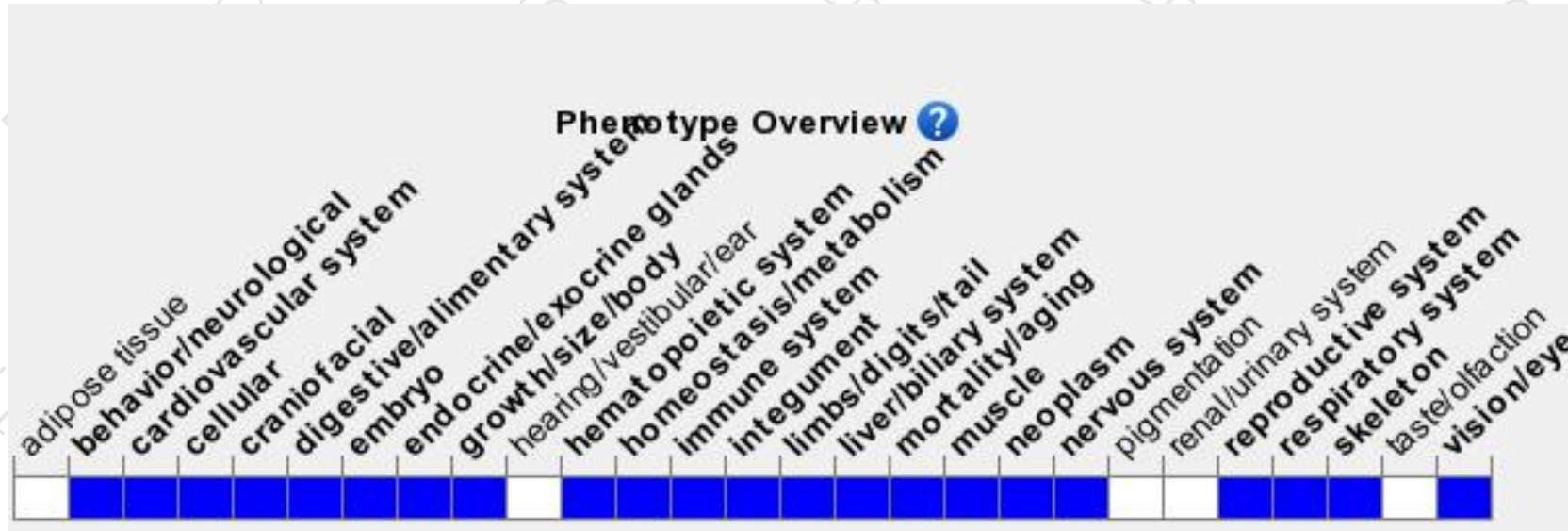
Genomic location distribution



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/>).

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

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