

Il7 Cas9-KO Strategy

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Reviewer:

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Design Date:

2018-6-22

Project Overview

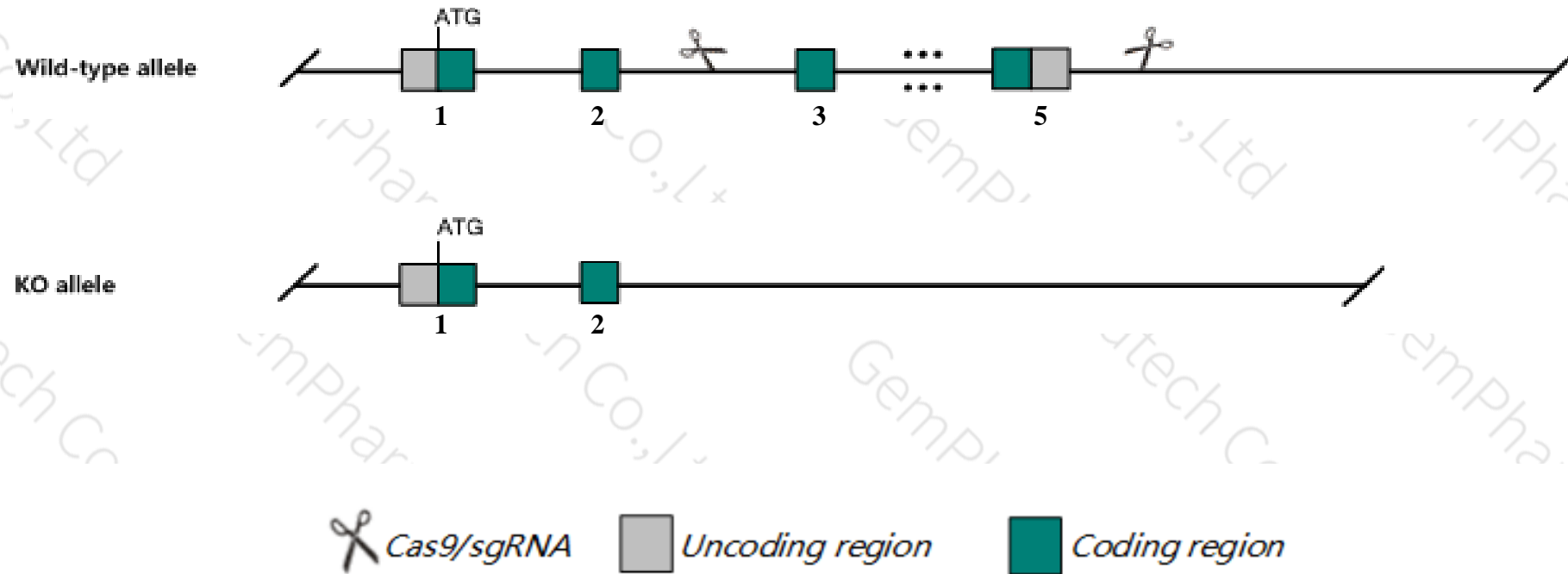
Project Name	<i>Il7</i>
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Project type	Cas9-KO
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Strain background	C57BL/6JGpt
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Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Il7* gene. The schematic diagram is as follows:



- The *Il7* gene has 5 transcripts. According to the structure of *Il7* gene, exon3-exon5 of *Il7*-205 (ENSMUST00000194279.5) 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 *Il7* gene. The brief process is as follows: sgRNA was transcribed in vitro. Cas9 and sgRNA 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.

- According to the existing MGI data, Mutant mice exhibit an increased white blood count.
- The *Il7* 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 the gene knockout on gene transcription, RNA splicing and protein translation cannot be predicted at the existing technology level.

Gene information (NCBI)

Il7 interleukin 7 [*Mus musculus* (house mouse)]

Gene ID: 16196, updated on 12-Aug-2019

Summary



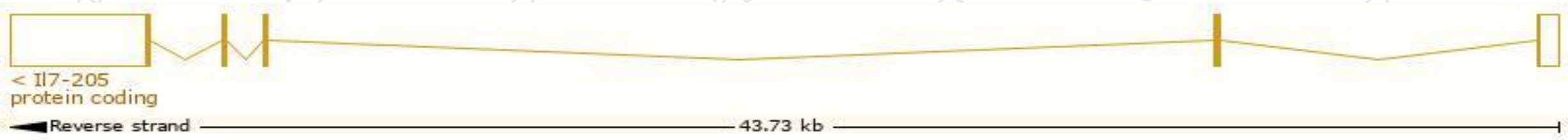
Official Symbol	Il7 provided by MGI
Official Full Name	interleukin 7 provided by MGI
Primary source	MGI:MGI:96561
See related	Ensembl:ENSMUSG00000040329
Gene type	protein coding
RefSeq status	REVIEWED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	Il-7; hlb368; A630026I06Rik
Summary	The protein encoded by this gene is a hematopoietic growth factor important for B and T cell development. Alternative splicing results in several transcript variants encoding different isoforms. [provided by RefSeq, Sep 2015]
Expression	Broad expression in thymus adult (RPKM 2.5), spleen adult (RPKM 1.2) and 17 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

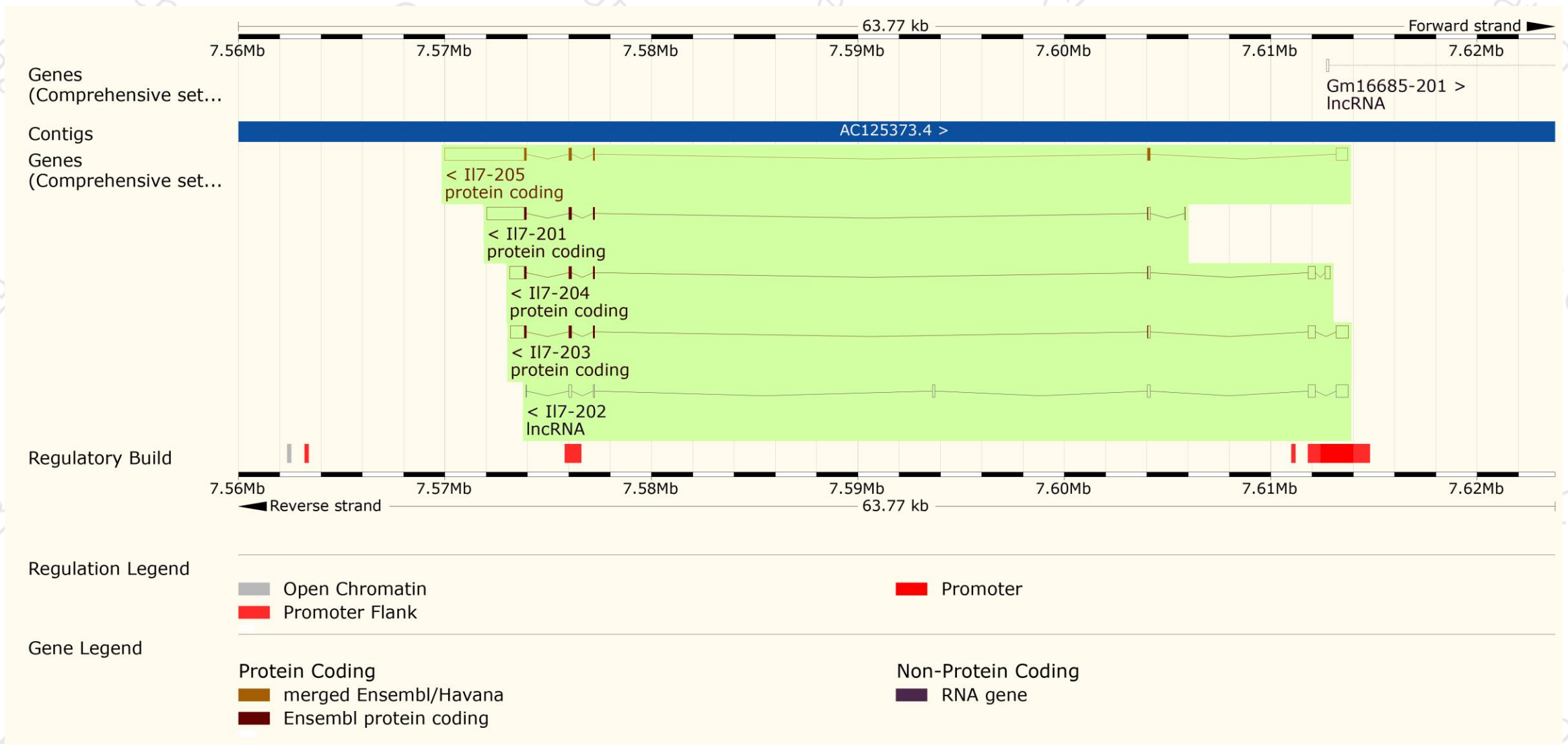
The gene has 5 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
II7-205	ENSMUST00000194279.5	4858	154aa	Protein coding	CCDS50859	P10168 Q544C8	TSL:1 GENCODE basic APPRIS P1
II7-201	ENSMUST00000168269.7	2307	113aa	Protein coding	CCDS84608	Q3UT18	TSL:1 GENCODE basic
II7-203	ENSMUST00000192202.5	2057	113aa	Protein coding	CCDS84608	Q3UT18	TSL:1 GENCODE basic
II7-204	ENSMUST00000194184.5	1785	113aa	Protein coding	CCDS84608	Q3UT18	TSL:1 GENCODE basic
II7-202	ENSMUST00000191681.1	1402	No protein	Processed transcript	-	-	TSL:1

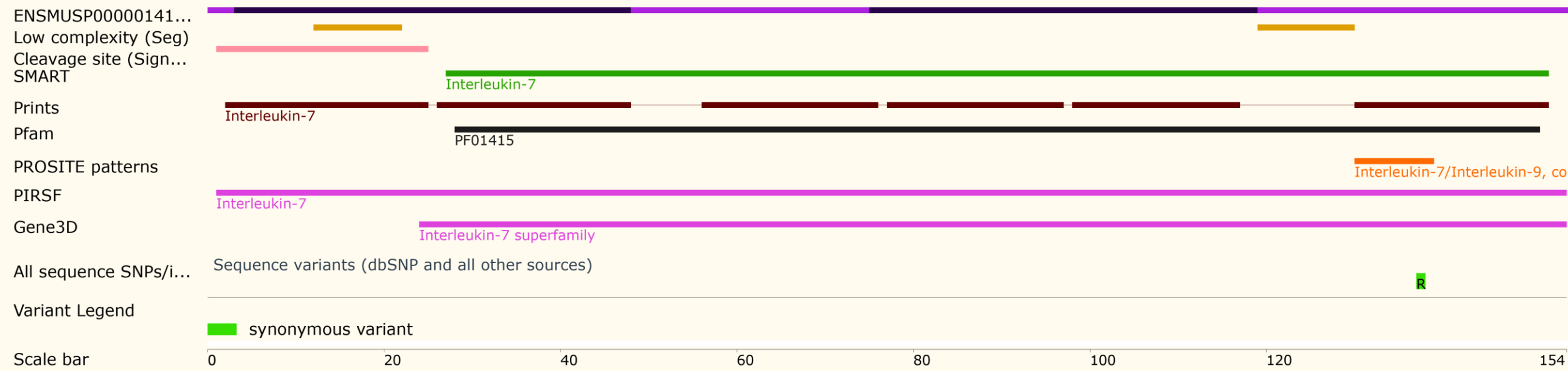
The strategy is based on the design of *II7-205* transcript,The transcription is shown below



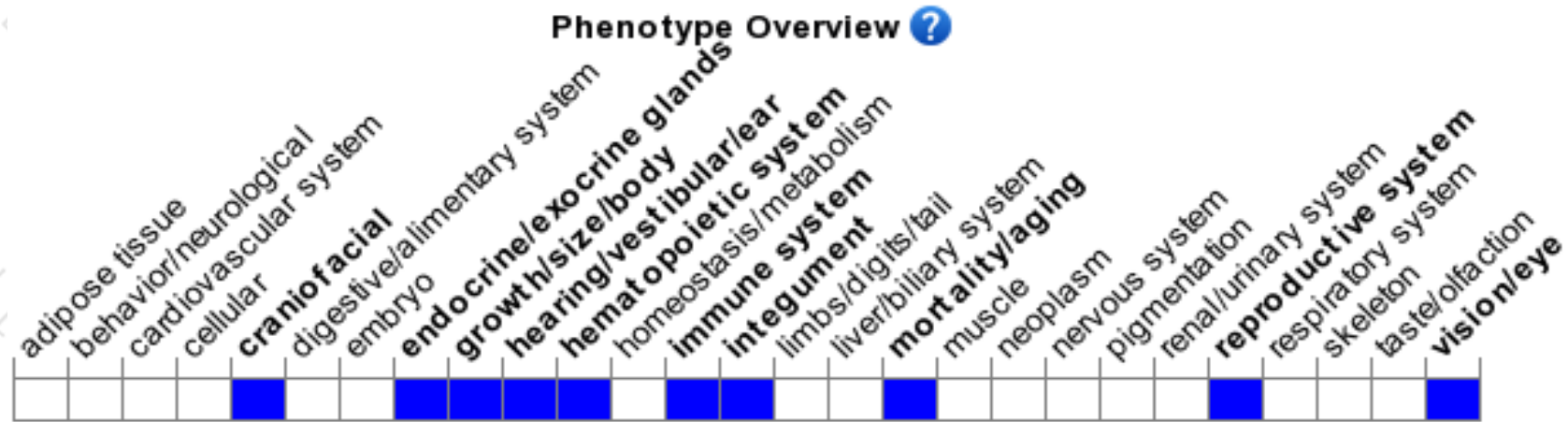
Genomic location distribution



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, Mutant mice exhibit an increased white blood count.

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

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