

Dsg4 Cas9-KO Strategy

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Reviewer:

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Design Date:

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Project Overview

Project Name

Dsg4

Project type

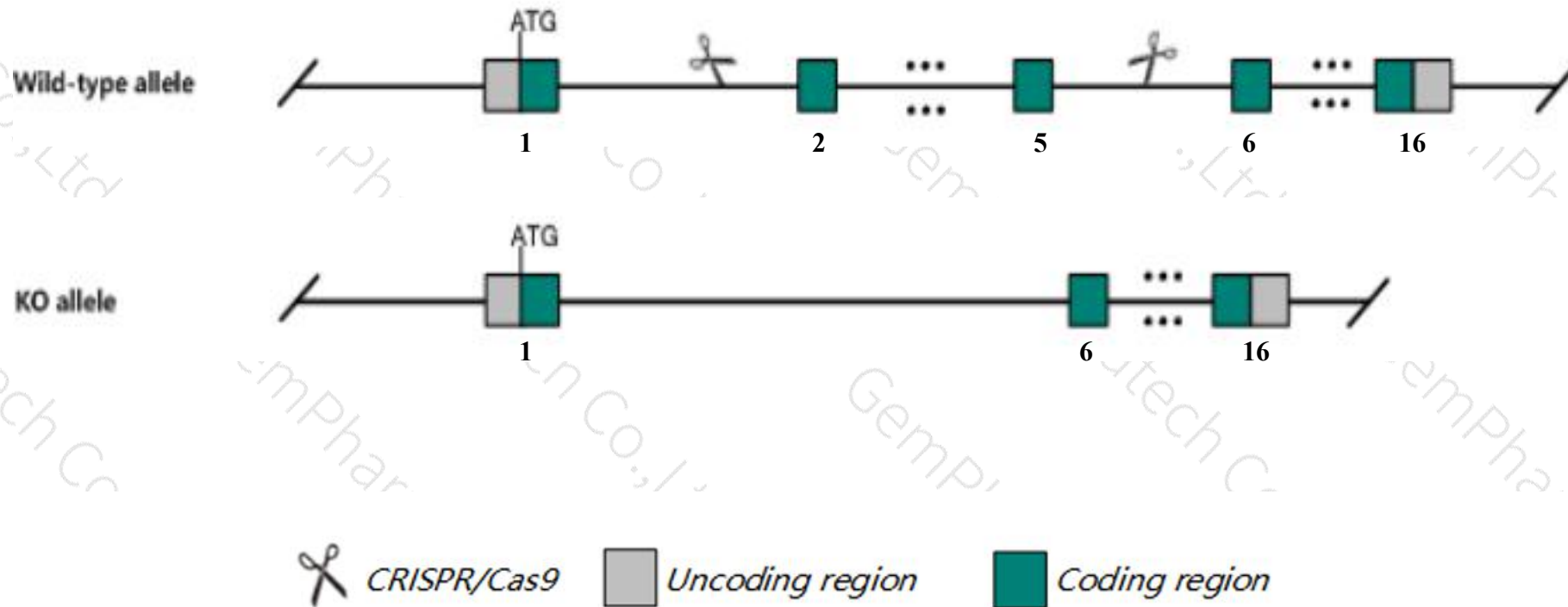
Cas9-KO

Strain background

C57BL/6JGpt

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Dsg4* gene. The schematic diagram is as follows:



- The *Dsg4* gene has 1 transcript. According to the structure of *Dsg4* gene, exon2-exon5 of *Dsg4-201* (ENSMUST00000019426.4) 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 *Dsg4* gene. The brief process is as follows: CRISPR/Cas9 system v

- According to the existing MGI data, Mice carrying mutations at this locus exhibit abnormalities in hair growth, vibrissae growth, and a thickened epidermis.
- The *Dsg4* gene is located on the Chr18. 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)

Dsg4 desmoglein 4 [Mus musculus (house mouse)]

Gene ID: 16769, updated on 31-Jan-2019

Summary



Official Symbol Dsg4 provided by [MGI](#)

Official Full Name desmoglein 4 provided by [MGI](#)

Primary source [MGI:MGI:2661061](#)

See related [Ensembl:ENSMUSG000000001804](#)

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 CDHF13, Iah

Summary This gene encodes a member of the cadherin family of proteins that forms an integral transmembrane component of desmosomes, the multiprotein complexes involved in cell adhesion, organization of the cytoskeleton, cell sorting and cell signaling. This gene is expressed in the suprabasal epidermis and hair follicle. The encoded preproprotein undergoes proteolytic processing to generate a mature, functional protein. Certain mutations in this gene are responsible for the lanceolate hair phenotype in mice. This gene is located in a cluster of desmosomal cadherin genes on chromosome 18. [provided by RefSeq, Feb 2016]

Expression Low expression observed in reference dataset [See more](#)

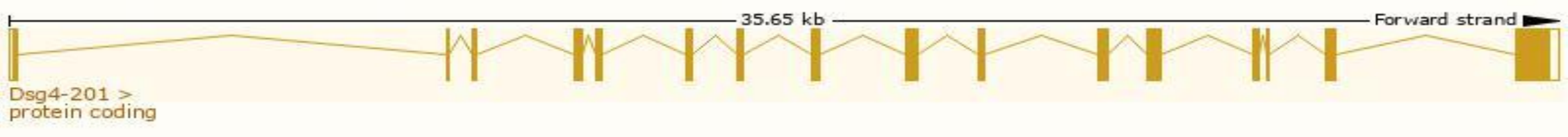
Orthologs [human](#) [all](#)

Transcript information (Ensembl)

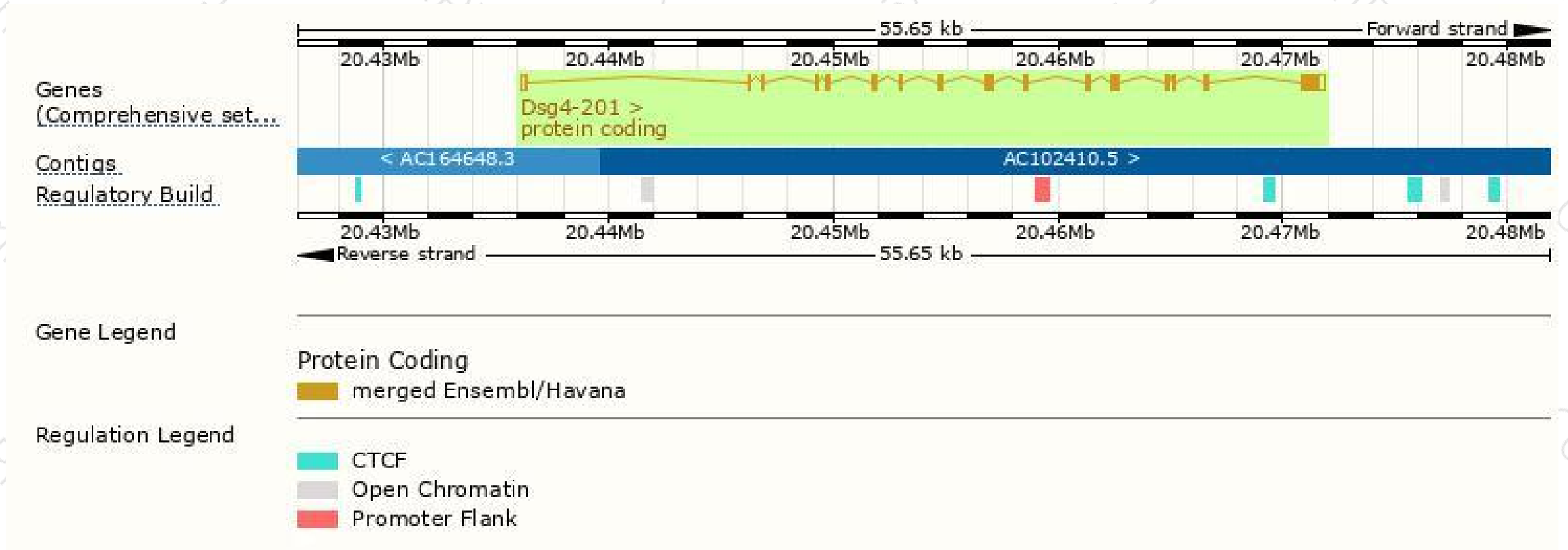
The gene has 1 transcript, and the transcript is shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Dsg4-201	ENSMUST00000019426.4	3478	1041aa	Protein coding	CCDS29082	Q7TMD7	TSL:1 GENCODE basic APPRIS P1

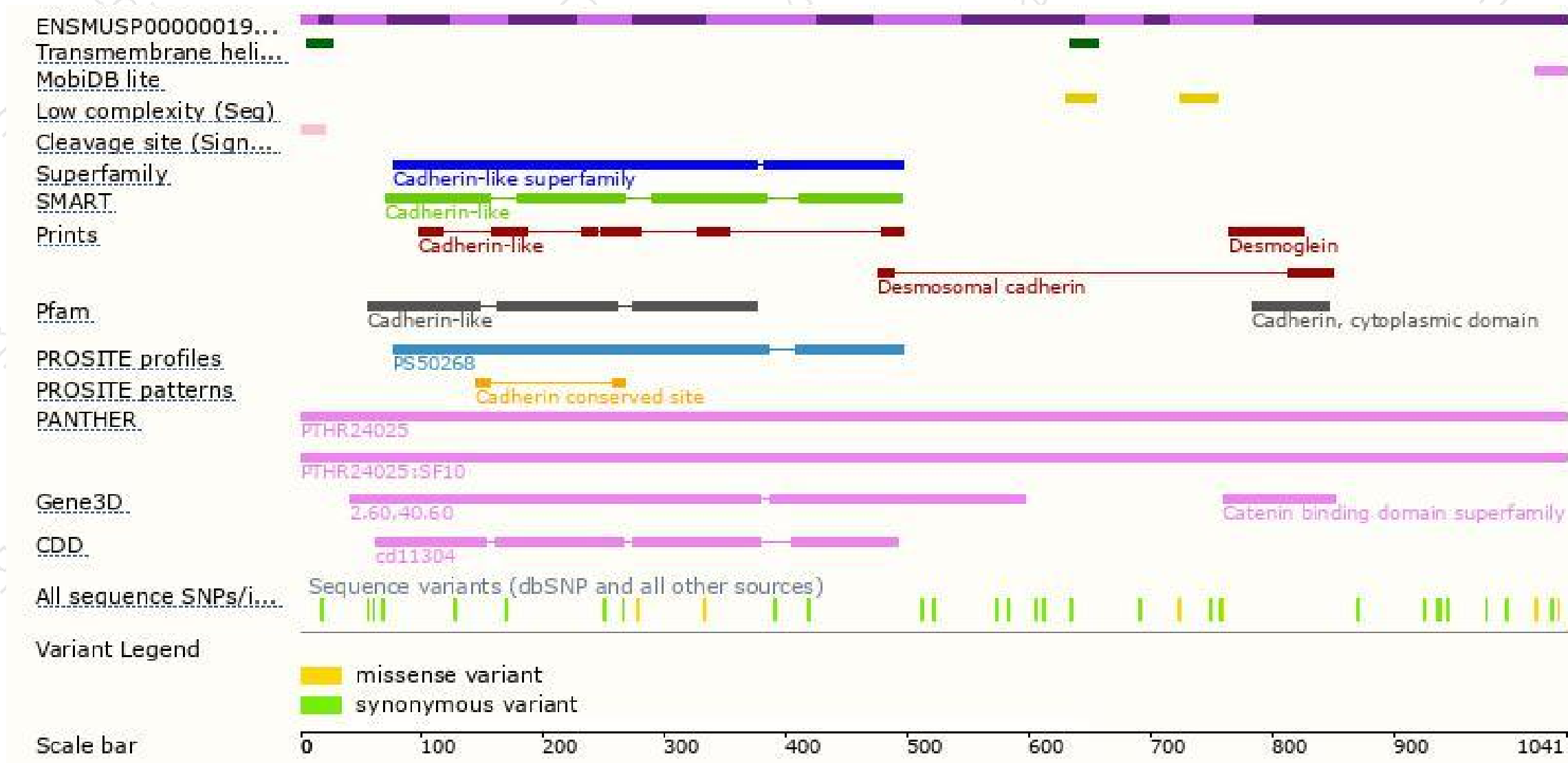
The strategy is based on the design of *Dsg4-201* transcript, The transcription is shown below



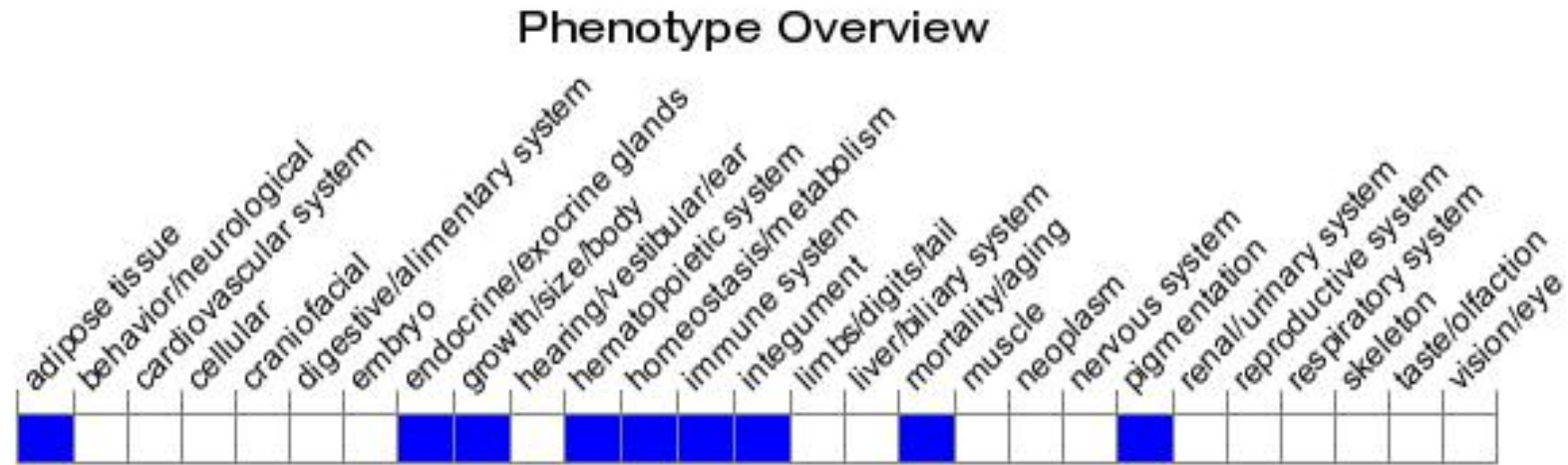
Genomic location distribution



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, Mice carrying mutations at this locus exhibit abnormalities in hair growth, vibrissae growth, and a thickened epidermis.

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

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