

A4gnt Cas9-CKO Strategy

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Project Overview

Project Name

A4gnt

Project type

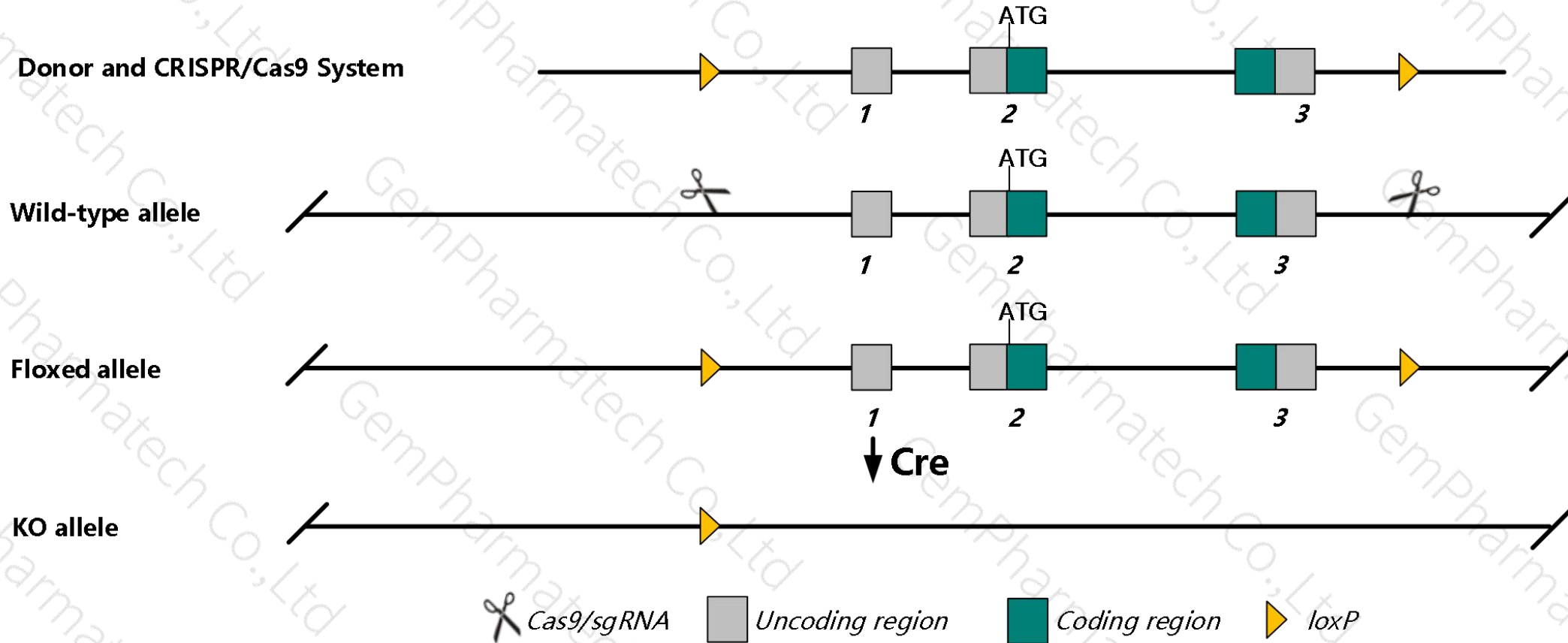
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *A4gnt* gene. The schematic diagram is as follows:



Technical routes

- The *A4gnt* gene has 1 transcript. According to the structure of *A4gnt* gene, exon1-exon3 of *A4gnt-201* (ENSMUST00000042553.7) 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 *A4gnt* 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, Mice homozygous for a knock-out allele exhibit gastric adenocarcinoma with increased cell proliferation, angiogenesis, inflammation and gastric mucosal thickness.
- The *A4gnt* gene is located on the Chr9. 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)

A4gnt alpha-1,4-N-acetylglucosaminyltransferase [*Mus musculus* (house mouse)]

Gene ID: 333424, updated on 12-Aug-2019

Summary

Official Symbol	A4gnt provided by MGI
Official Full Name	alpha-1,4-N-acetylglucosaminyltransferase provided by MGI
Primary source	MGI:MGI:2143261
See related	Ensembl:ENSMUSG00000037953
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	Gm798; AV080780; Alpha4gnt
Summary	This gene encodes a protein from the glycosyltransferase 32 family. The encoded enzyme catalyzes the transfer of N-acetylglucosamine to alpha-1,4-linked beta-galactose residues. This enzyme is required for type III mucin synthesis and it is largely associated with the Golgi apparatus membrane. The encoded protein appears to be expressed in adenocarcinoma cells of pancreatic, biliary tract and gastric cancers.[provided by RefSeq, Jan 2010]
Expression	Biased expression in stomach adult (RPKM 13.0), duodenum adult (RPKM 7.6) and 4 other tissues See more
Orthologs	human all

Genomic context

Location: 9; 9 E3.3

Exon count: 5

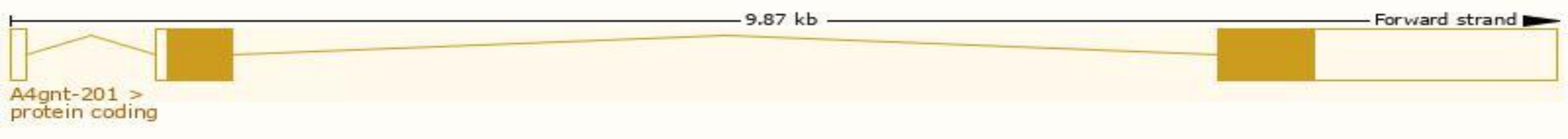
See A4gnt in [Genome Data Viewer](#)

Transcript information (Ensembl)

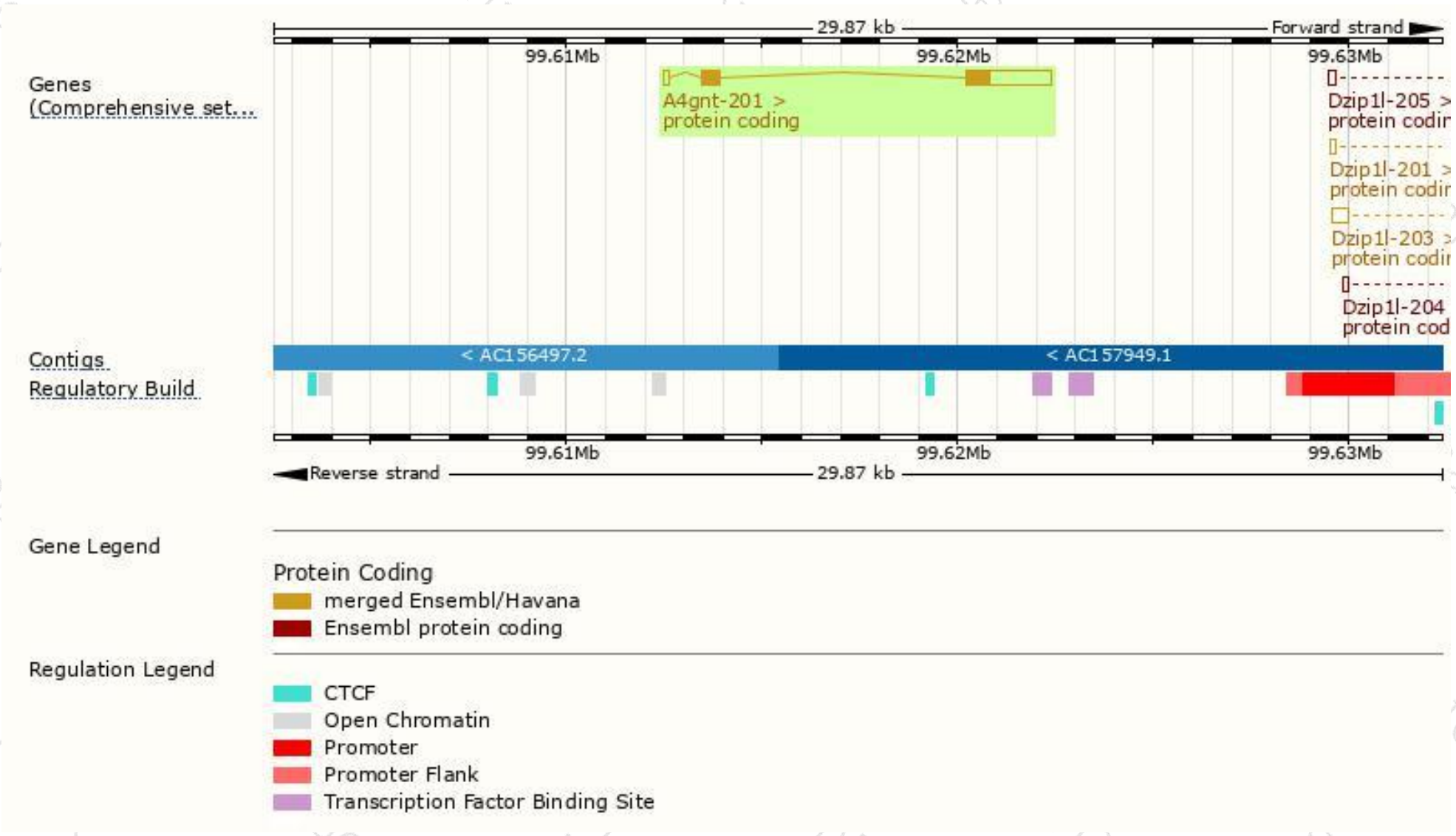
The gene has 1 transcript, and the transcript is shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
A4gnt-201	ENSMUST00000042553.7	2757	341aa	Protein coding	CCDS40740	Q14BT6	TSL:1 GENCODE basic APPRIS P1

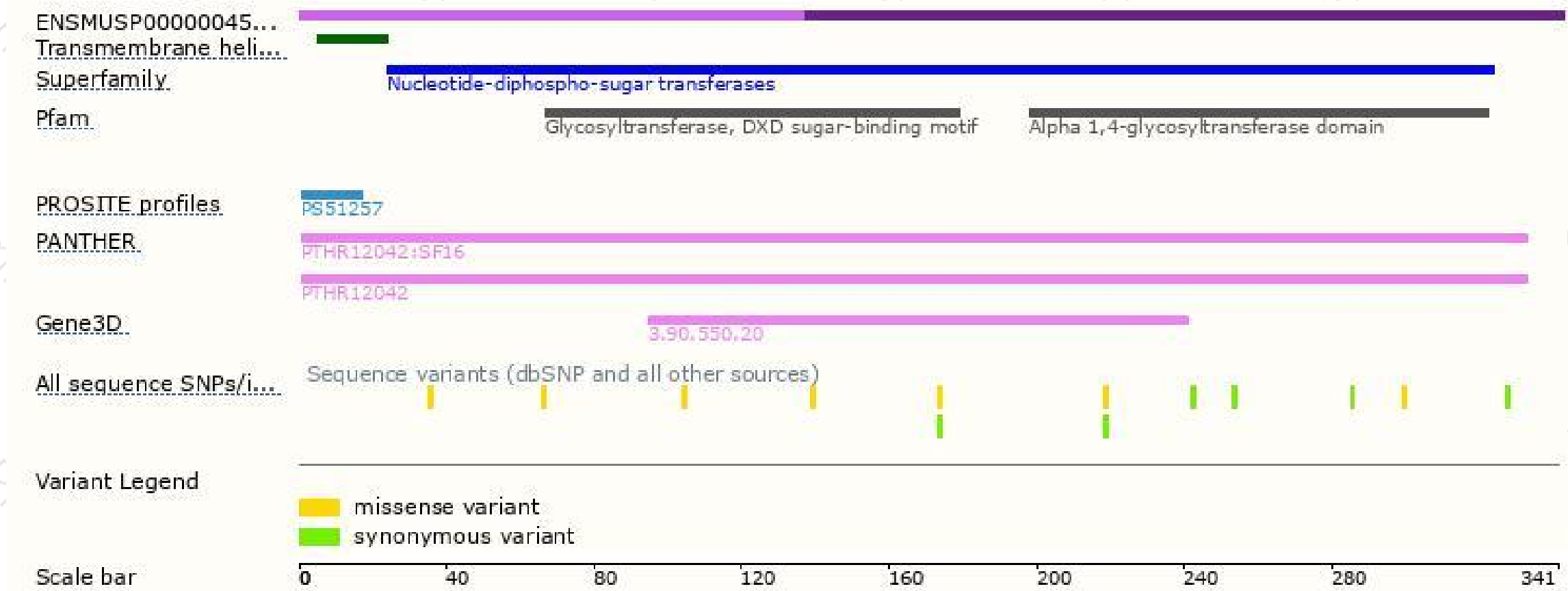
The strategy is based on the design of *A4gnt-201* transcript, The transcription is shown below



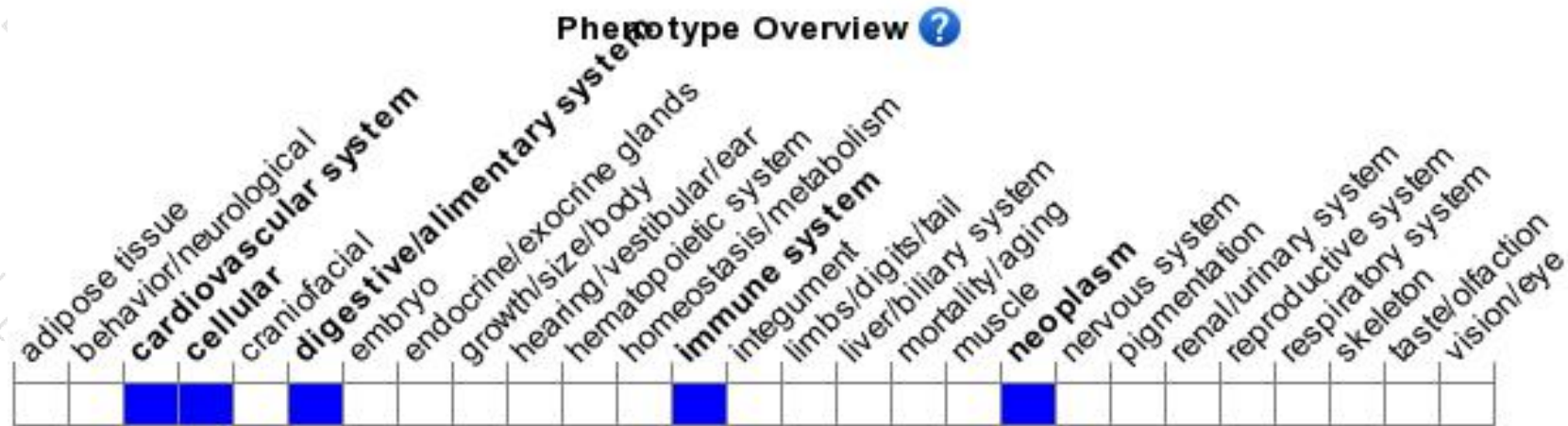
Genomic location distribution



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 homozygous for a knock-out allele exhibit gastric adenocarcinoma with increased cell proliferation, angiogenesis, inflammation and gastric mucosal thickness.

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

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