

Alg1 Cas9-CKO Strategy

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Project Overview

Project Name

Alg1

Project type

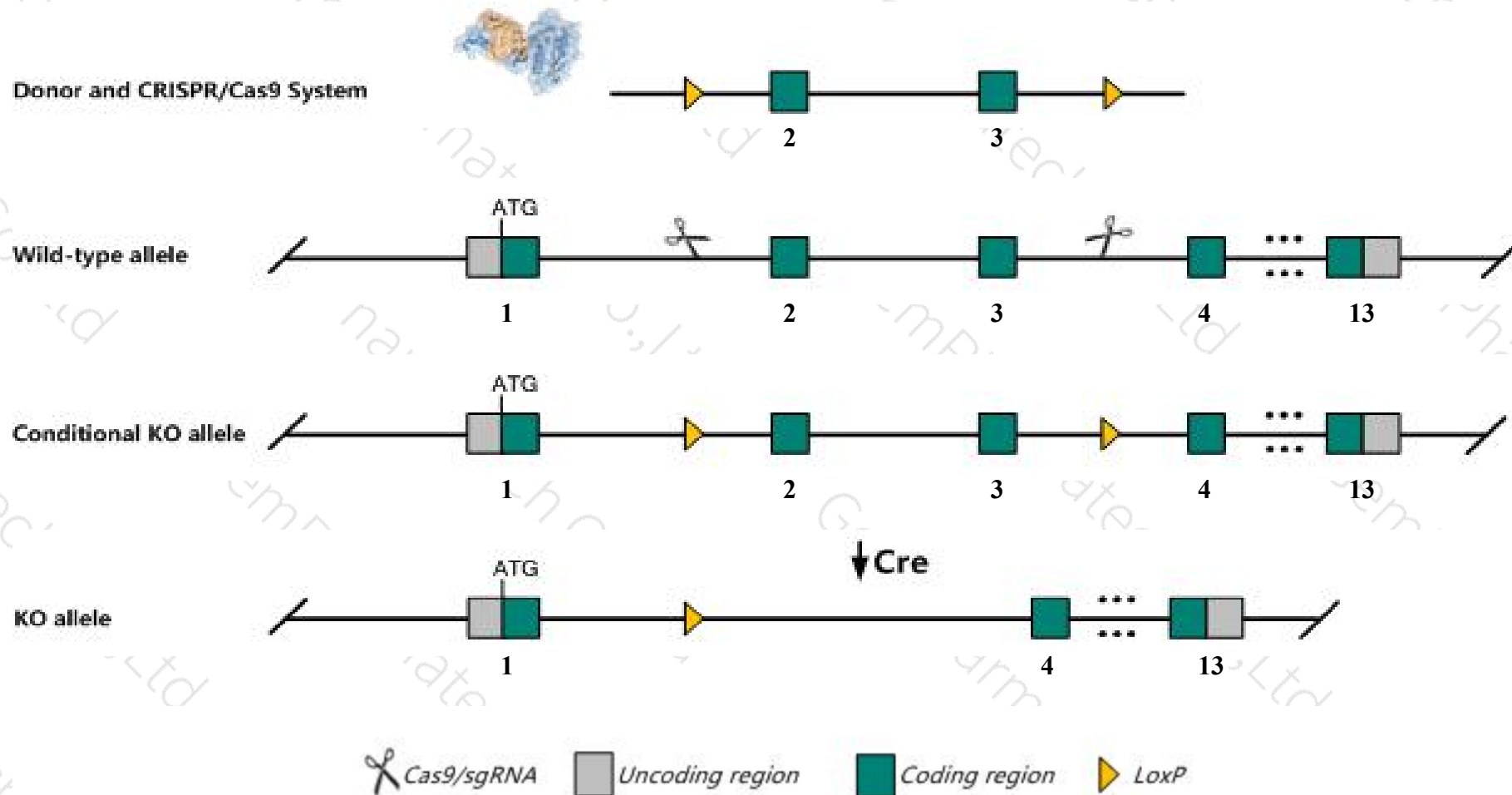
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Alg1* gene. The schematic diagram is as follows:



Technical routes

- The *Alg1* gene has 5 transcripts. According to the structure of *Alg1* gene, exon2-exon3 of *Alg1*-202(ENSMUST00000100196.8) transcript is recommended as the knockout region. The region contains 182bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Alg1* gene. The brief process is as follows: sgRNA was transcribed in vitro, donor vector was constructed. Cas9, sgRNA 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 was 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.

- The *Alg1* gene is located on the Chr16. 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)

Alg1 asparagine-linked glycosylation 1 (beta-1,4-mannosyltransferase) [Mus musculus (house mouse)]

Gene ID: 208211, updated on 13-Mar-2020

Summary



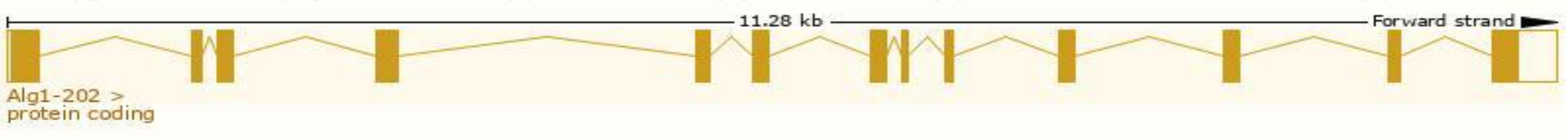
Official Symbol	Alg1 provided by MGI
Official Full Name	asparagine-linked glycosylation 1 (beta-1,4-mannosyltransferase) provided by MGI
Primary source	MGI:MGI:2384774
See related	Ensembl:ENSMUSG00000039427
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	HMAT1, HMT1
Expression	Ubiquitous expression in adrenal adult (RPKM 34.2), ovary adult (RPKM 29.7) and 28 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

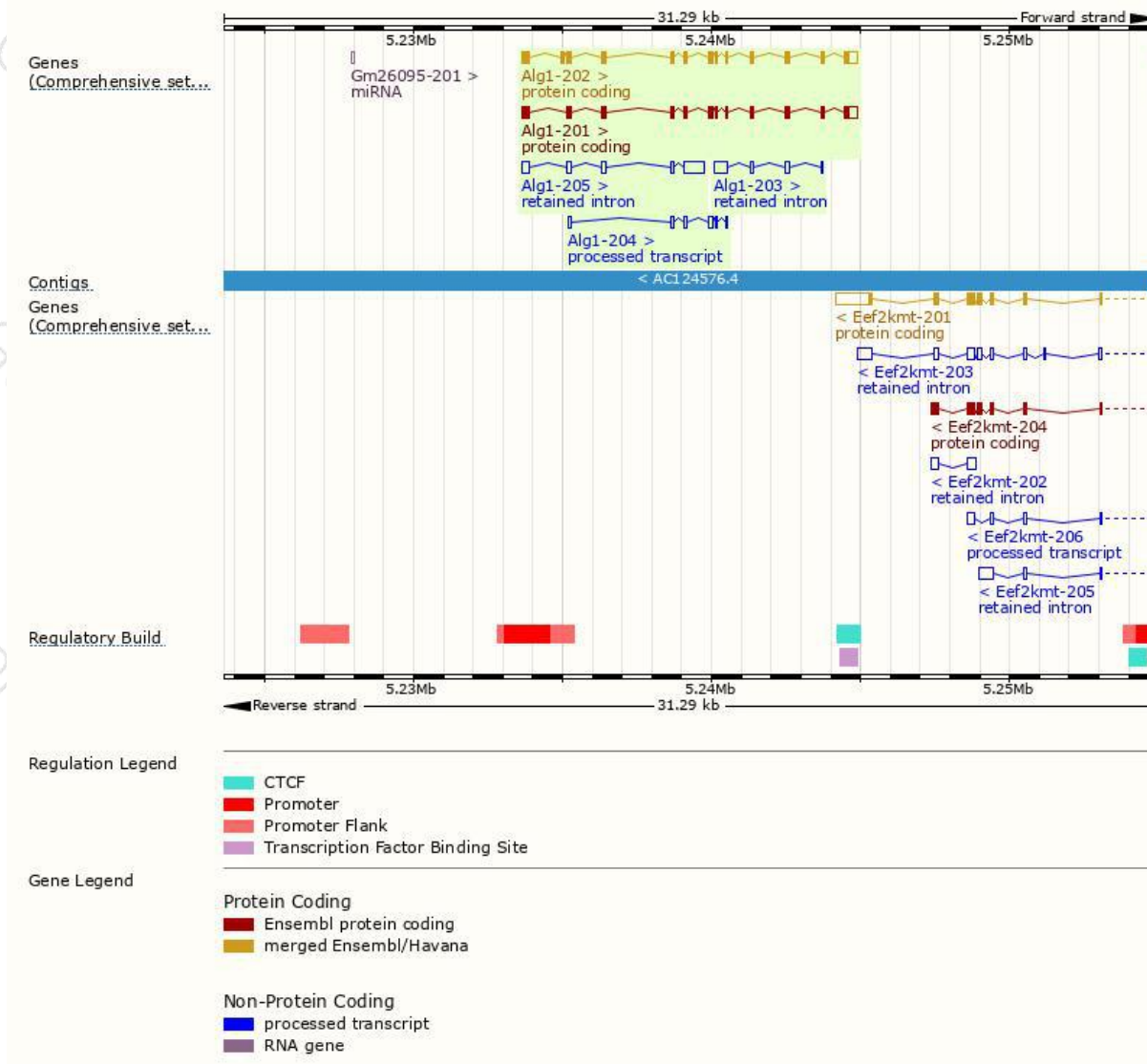
The gene has 5 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Alg1-202	ENSMUST00000100196.8	1755	482aa	Protein coding	CCDS49753	Q921Q3	TSL:1 GENCODE basic APPRIS P2
Alg1-201	ENSMUST00000049207.8	1669	456aa	Protein coding	-	Q921Q3	TSL:2 GENCODE basic APPRIS ALT2
Alg1-204	ENSMUST00000147530.1	519	No protein	Processed transcript	-	-	TSL:3
Alg1-205	ENSMUST00000153730.7	1246	No protein	Retained intron	-	-	TSL:3
Alg1-203	ENSMUST00000142902.1	708	No protein	Retained intron	-	-	TSL:3

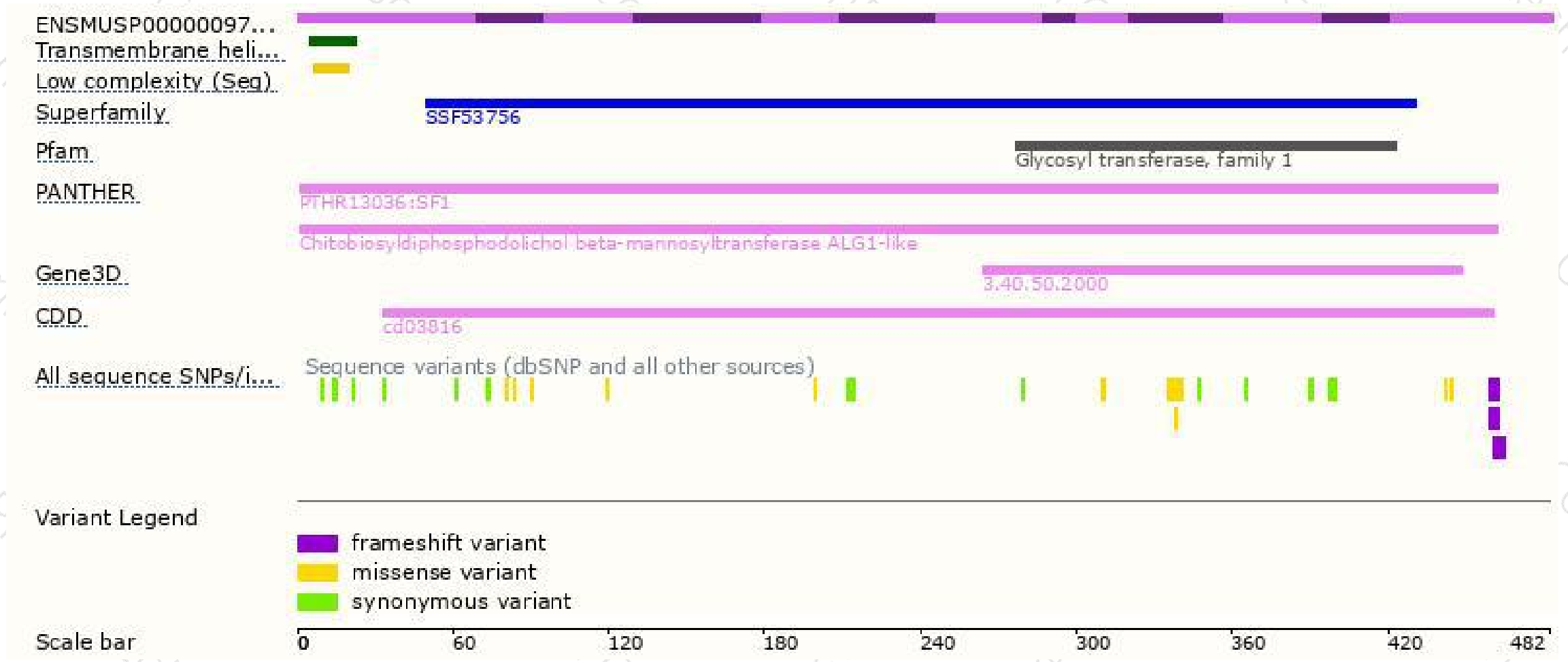
The strategy is based on the design of *Alg1-202* transcript,the transcription is shown below:



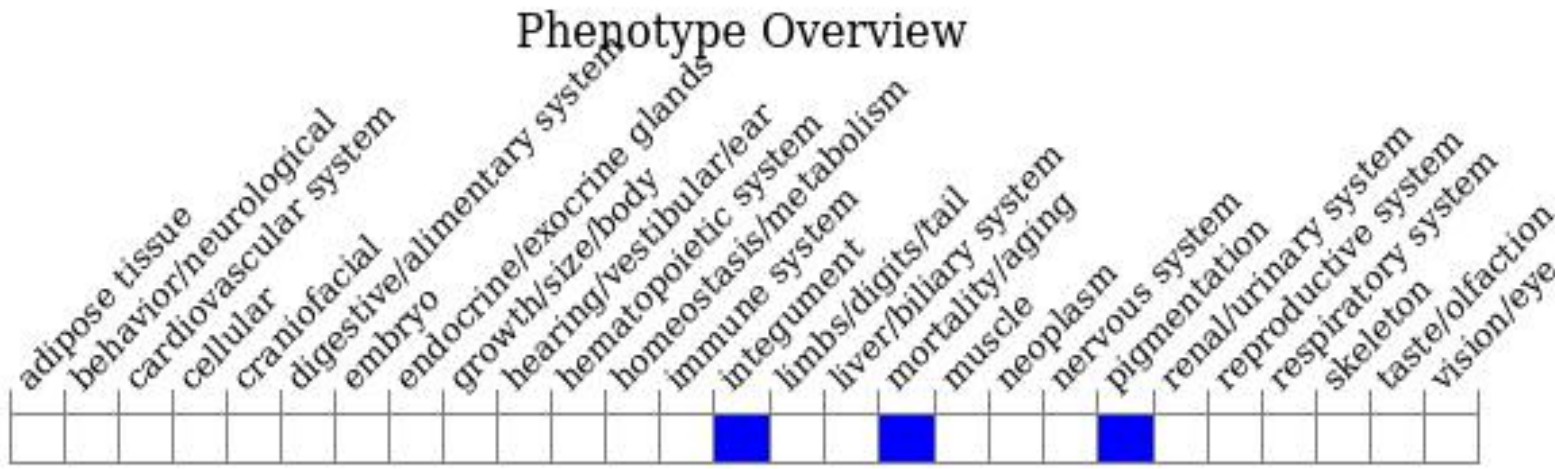
Genomic location distribution



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/>).

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

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