Col16a1 Cas9-KO Strategy

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Project Overview

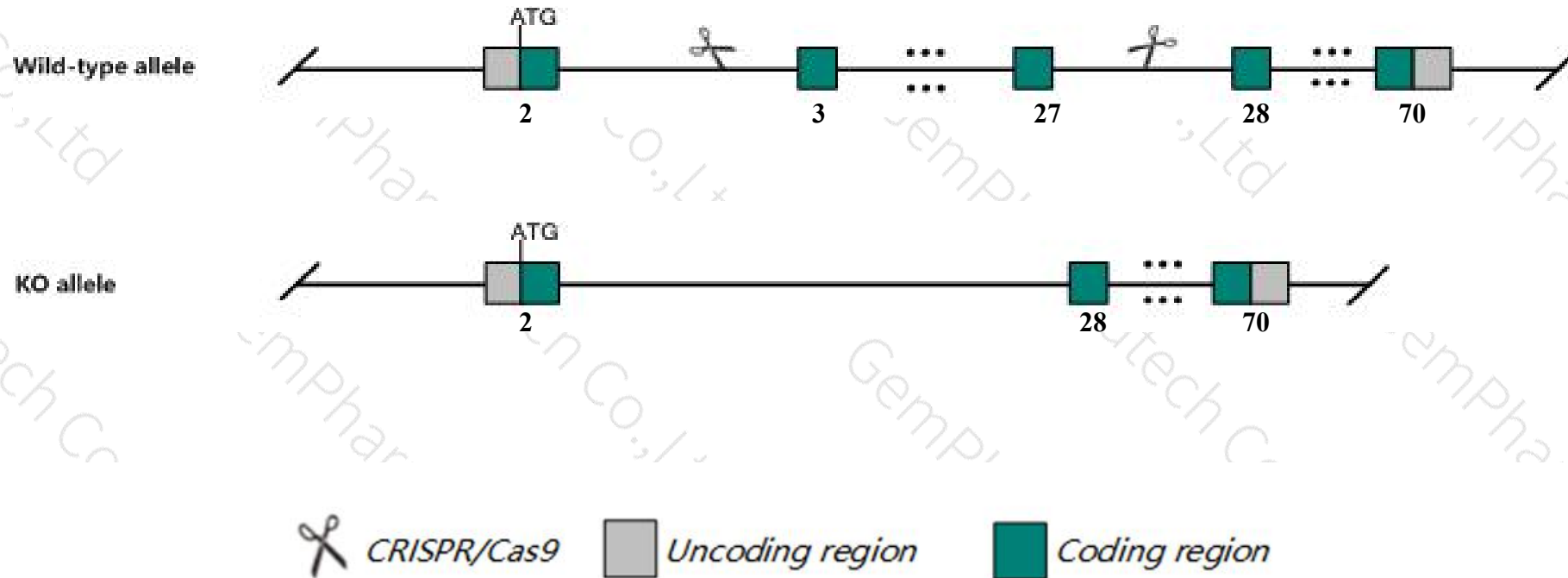|	
Project Name	***Col16a1***
Project type	**Cas9-KO**
Strain background	**C57BL/6JGpt**

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Col16a1* gene. The schematic diagram is as follows:

➢ The *Col16a1* gene has 13 transcripts. According to the structure of *Col16a1* gene, exon3-exon27 of *Col16a1-201*
(ENSMUST00000044565.14) transcript is recommended as the knockout region.The region contains 1757bp coding sequence
Knock out the region will result in disruption of protein function.

➢ In this project we use CRISPR/Cas9 technology to modify *Col16a1* gene. The brief process is as follows: CRISPR/Cas9 syste

➢ The effect on transcript *Col16a1*-2014&206&208&210 is unknown.

➢ Transcript *Col16a1*-205&207&211&212 may not be affected.

➢ The knockout region is near to the N-terminal of *Gm12963* gene,this strategy may influence the regulatory function of the N-terminal of *Gm12963* gene.

➢ The *Col16a1* gene is located on the Chr4. 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）

Col16a1   collagen, type XVI, alpha 1 [*Mus musculus* (house mouse)]

Gene ID: 107581, updated on 10-Oct-2019

Summary

Official Symbol	Col16a1 provided by MGI
Official Full Name	collagen, type XVI, alpha 1 provided by MGI
Primary source	MGI:MGI:1095396
See related	Ensembl:ENSMUSG00000040690
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	CA1F; AI838662; 2700007F12Rik; A530052M23Rik
Expression	Broad expression in limb E14.5 (RPKM 43.0), bladder adult (RPKM 17.7) and 16 other tissues See more
Orthologs	human all

Genomic context

Location: 4; 4 D2.2

Exon count: 73

See Col16a1 in Genome Data Viewer

| Annotation release	Status	Assembly	Chr	Location
108	current	GRCm38.p6 (GCF_000001635.26)	4	NC_000070.6 (130047817..130099277)
Build 37.2	previous assembly	MGSCv37 (GCF_000001635.18)	4	NC_000070.5 (129725084..129776521)

Transcript information（Ensembl）

The gene has 13 transcripts,all transcripts are shown below:

| Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Col16a1-201	ENSMUST00000044565.14	5206	1580aa	Protein coding	CCDS38889	Q8BLX7	TSL:1 GENCODE basic APPRIS P1
Col16a1-210	ENSMUST00000143577.1	4037	1283aa	Protein coding	-	A3KFV7	CDS 5' incomplete TSL:1
Col16a1-204	ENSMUST00000123617.7	452	129aa	Protein coding	-	A3KFV6	CDS 3' incomplete TSL:5
Col16a1-206	ENSMUST00000132251.1	410	22aa	Protein coding	-	A3KFV1	CDS 3' incomplete TSL:3
Col16a1-208	ENSMUST00000142293.7	383	61aa	Protein coding	-	A3KFV2	CDS 3' incomplete TSL:2
Col16a1-209	ENSMUST00000143432.7	5138	1046aa	Nonsense mediated decay	-	E9Q0X4	TSL:1
Col16a1-213	ENSMUST00000154441.1	477	No protein	Retained intron	-	-	TSL:5
Col16a1-202	ENSMUST00000097867.8	4574	No protein	lncRNA	-	-	TSL:1
Col16a1-203	ENSMUST00000106001.7	3519	No protein	lncRNA	-	-	TSL:1
Col16a1-207	ENSMUST00000135675.1	833	No protein	lncRNA	-	-	TSL:1
Col16a1-211	ENSMUST00000146606.7	717	No protein	lncRNA	-	-	TSL:5
Col16a1-205	ENSMUST00000129937.1	445	No protein	lncRNA	-	-	TSL:2
Col16a1-212	ENSMUST00000151541.7	322	No protein	lncRNA	-	-	TSL:3

The strategy is based on the design of *Col16a1-201* transcript,The transcription is shown below
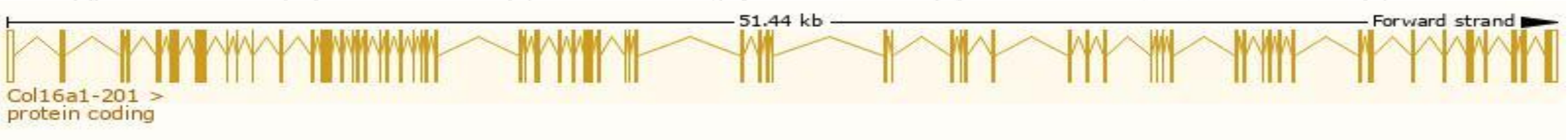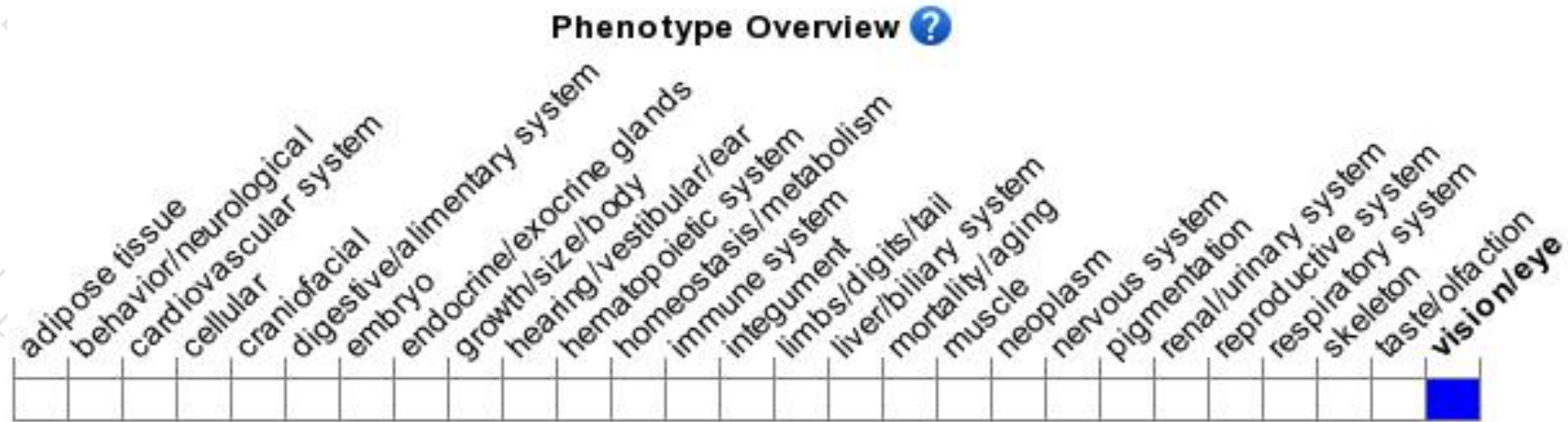
Genomic location distribution
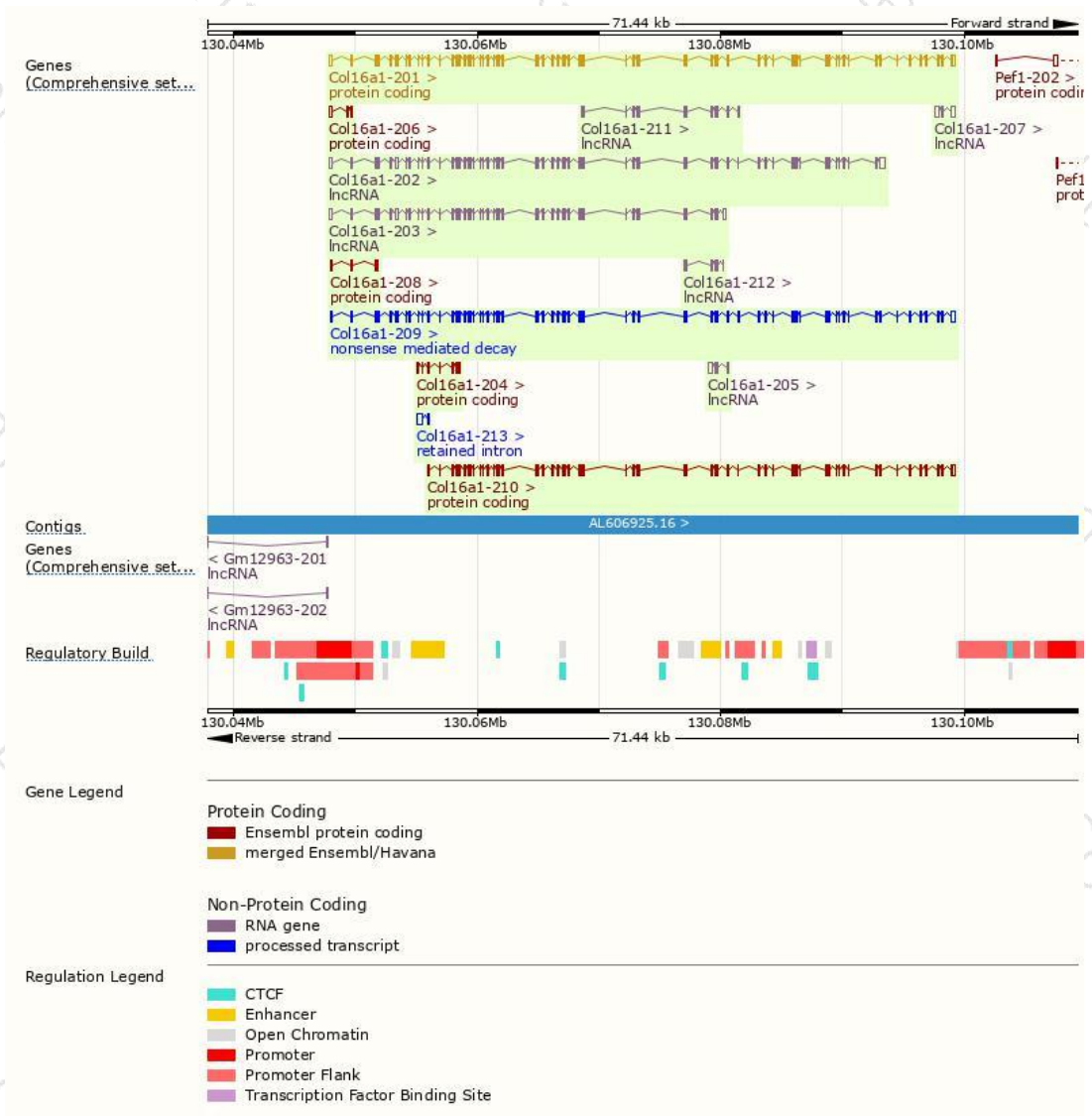
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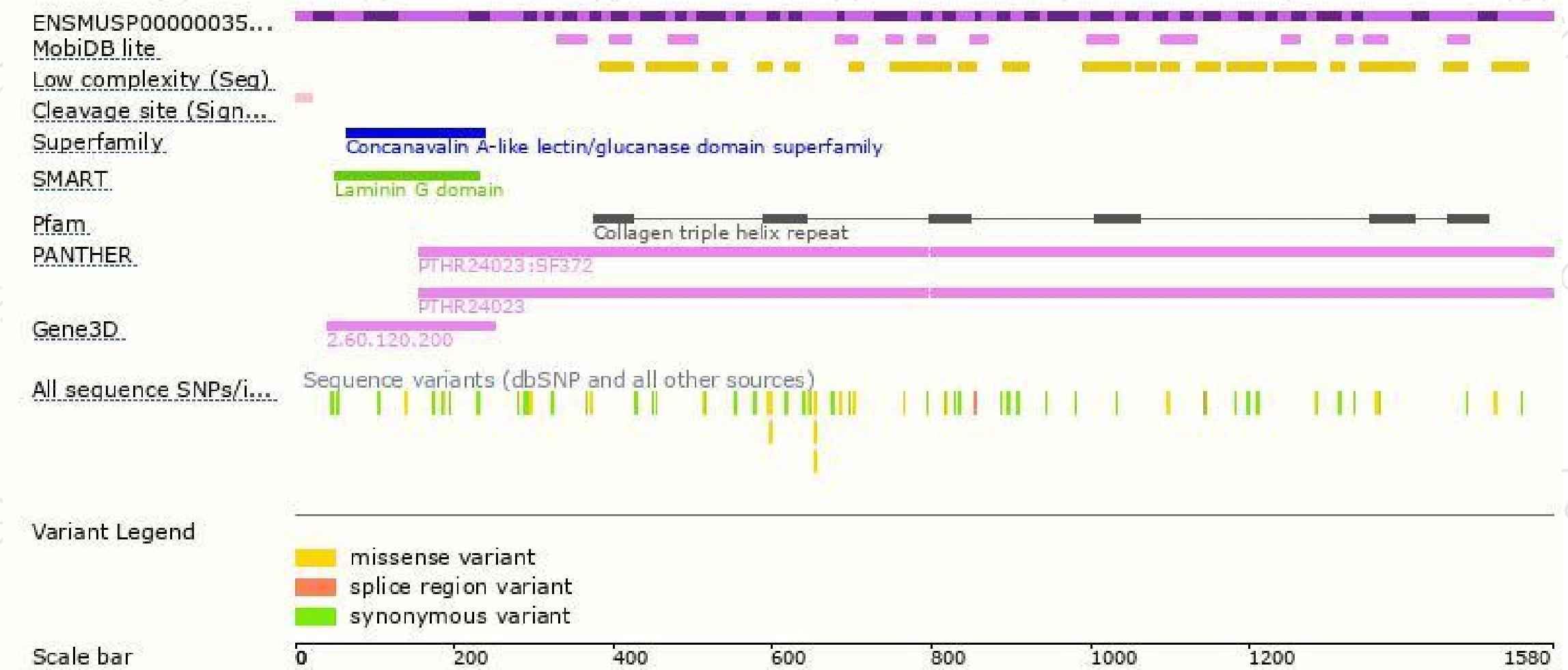
Mouse phenotype description(MGI)

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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