Hs6st1 Cas9-CKO Strategy

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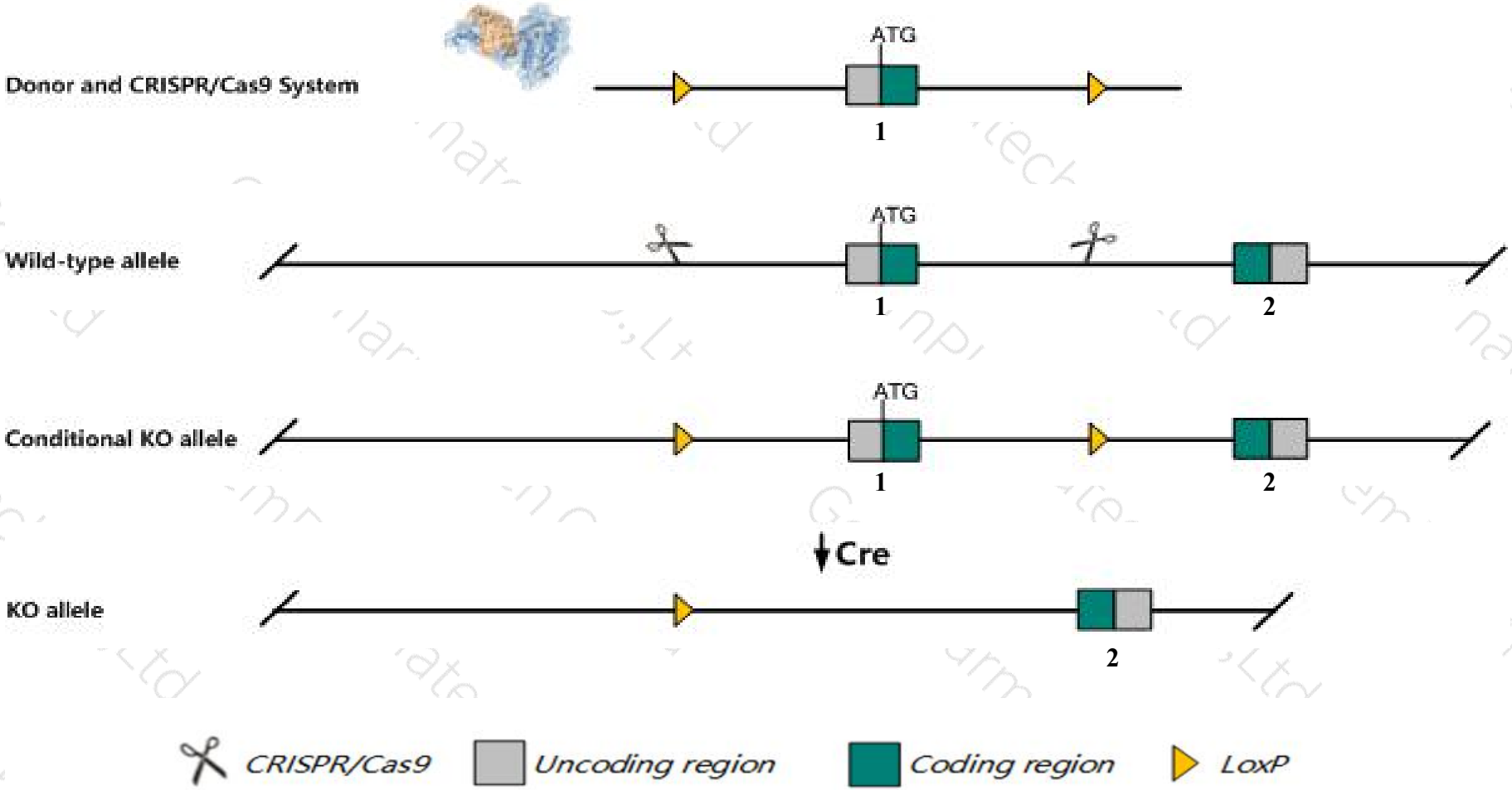
Project Overview

Project Name	***Hs6st1***
Project type	**Cas9-CKO**
Strain background	**C57BL/6JGpt**

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Hs6st1* gene. The schematic diagram is as follows:



Technical routes

- The *Hs6st1* gene has 2 transcripts. According to the structure of *Hs6st1* gene, exon1 of *Hs6st1-201* (ENSMUST00000088174.3) transcript is recommended as the knockout region.The region contains start codon ATG. Knock out the region will result in disruption of protein function.

- In this project we use CRISPR/Cas9 technology to modify *Hs6st1* 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.

Notice

- According to the existing MGI data,Mice homozygous for a null allele show prenatal loss, stunted growth, dilated alveoli and lower postweaning survival. Homozygotes for another null allele show additional defects in placenta, eye, phalanx and tarsus morphology. Homozygotes for a gene trapallele show altered retinal axon guidance.

- The *Hs6st1* gene is located on the Chr1. 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）

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Hs6st1 heparan sulfate 6-O-sulfotransferase 1 [*Mus musculus* (house mouse)]

Gene ID: 50785, updated on 10-Oct-2019

Summary

Official Symbol	Hs6st1 provided by MGI
Official Full Name	heparan sulfate 6-O-sulfotransferase 1 provided by MGI
Primary source	MGI:MGI:1354958
See related	Ensembl:ENSMUSG00000045216
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	6Ost1
Expression	Ubiquitous expression in adrenal adult (RPKM 91.8), kidney adult (RPKM 52.1) and 27 other tissues See more
Orthologs	human all

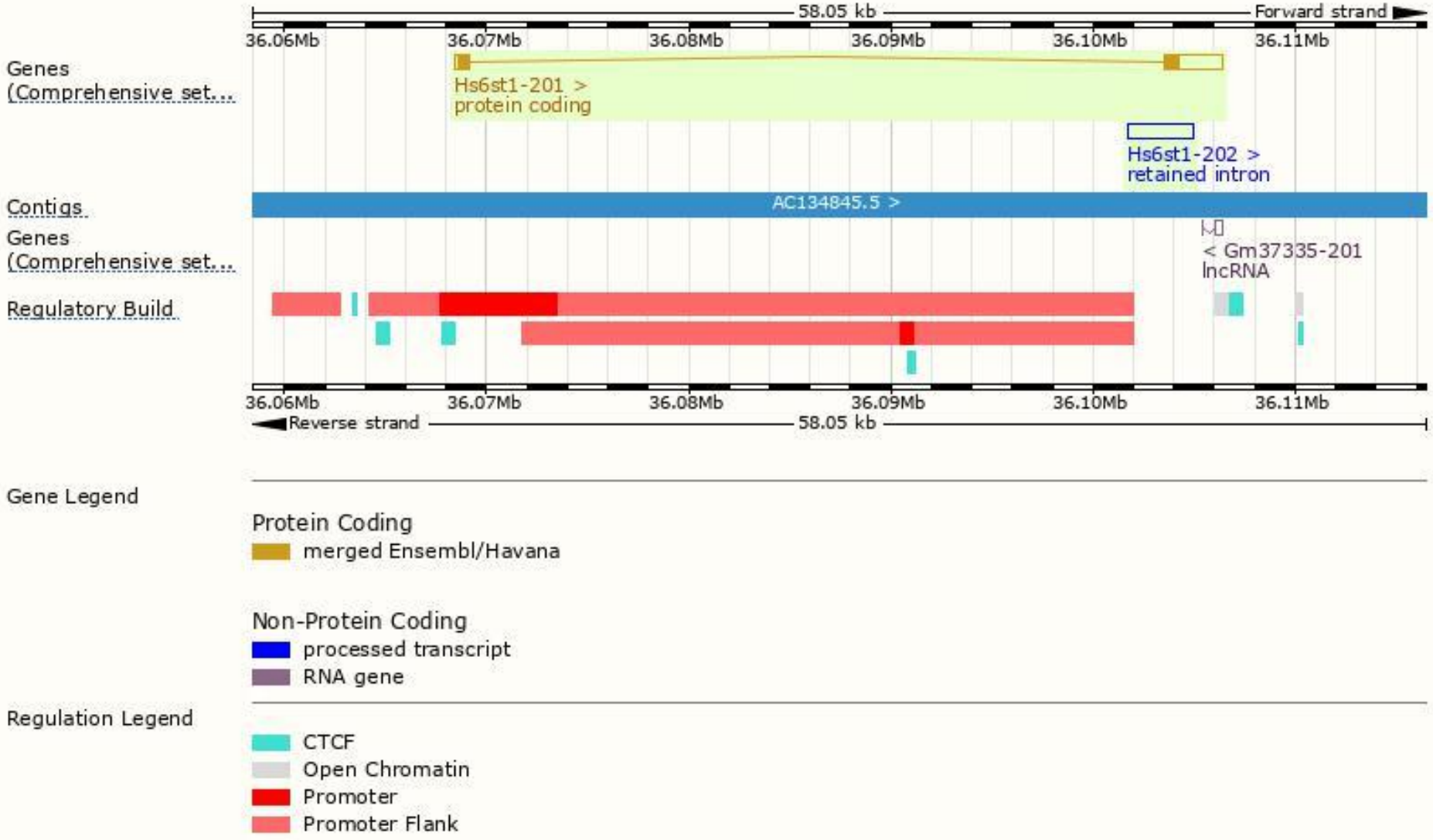
Transcript information（Ensembl）

The gene has 2 transcripts,all transcripts are shown below:

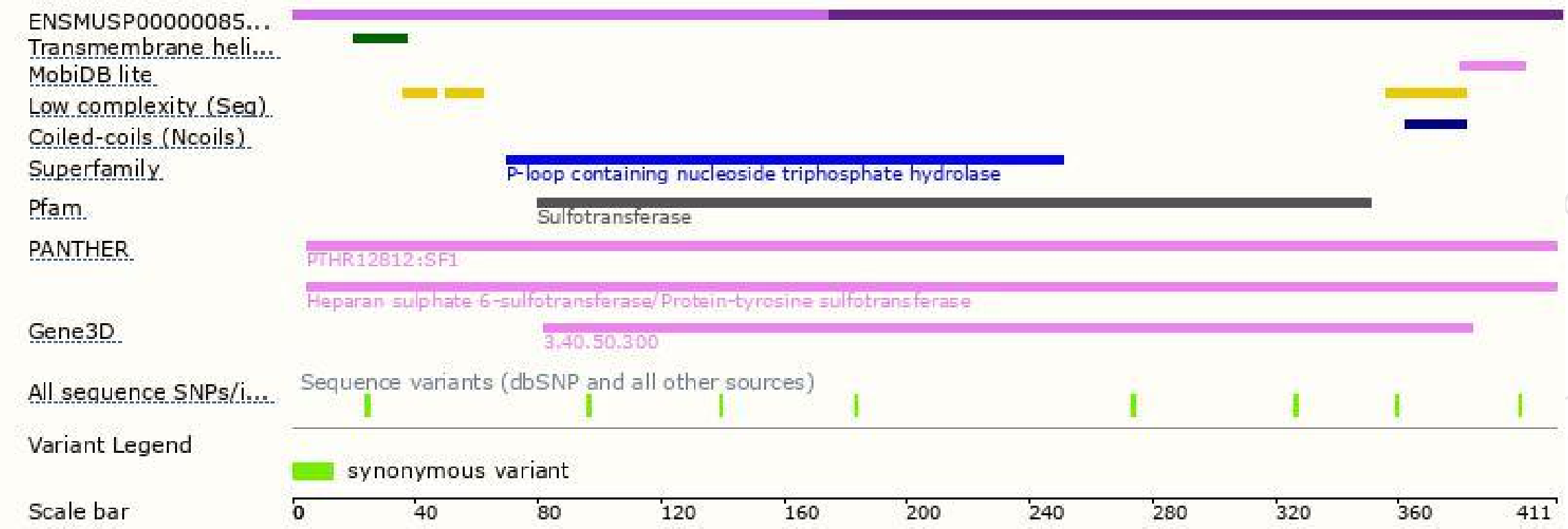
Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Hs6st1-201	ENSMUST00000088174.3	3719	411aa	Protein coding	CCDS48237	Q9QYK5	TSL:1 GENCODE basic APPRIS P1
Hs6st1-202	ENSMUST00000194670.1	3291	No protein	Retained intron	-	-	TSL:NA

The strategy is based on the design of *Hs6st1-201* transcript,The transcription is shown below

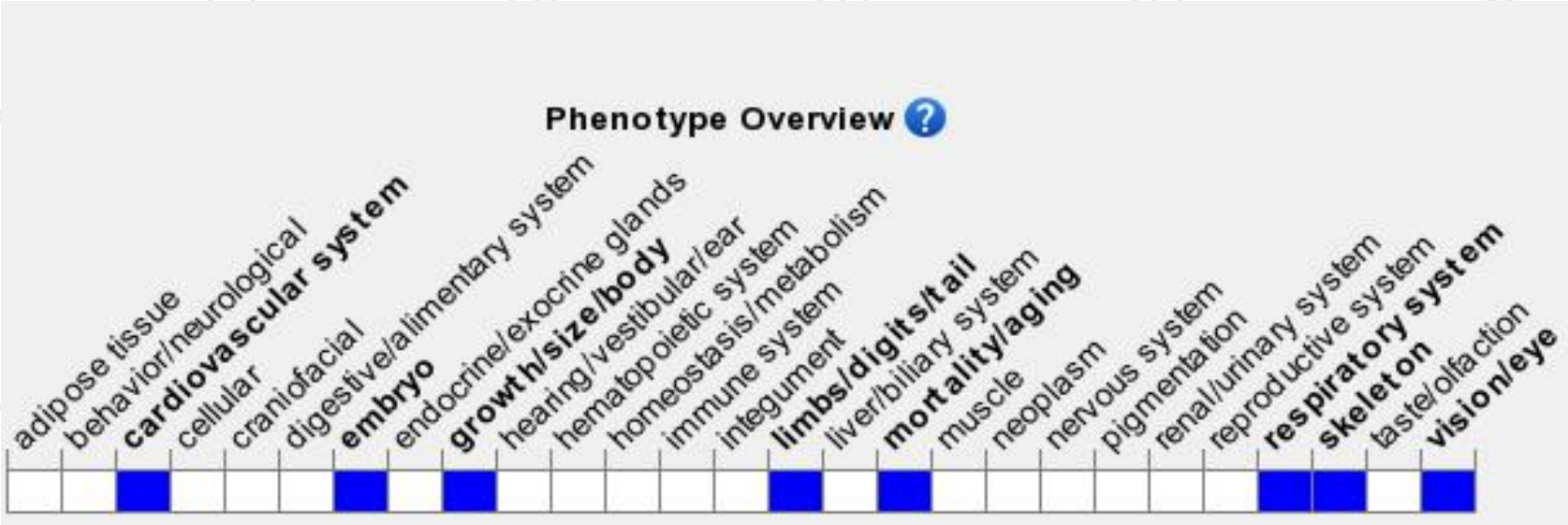
Genomic location distribution



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/).

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

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