Hoxd11 Cas9-KO Strategy

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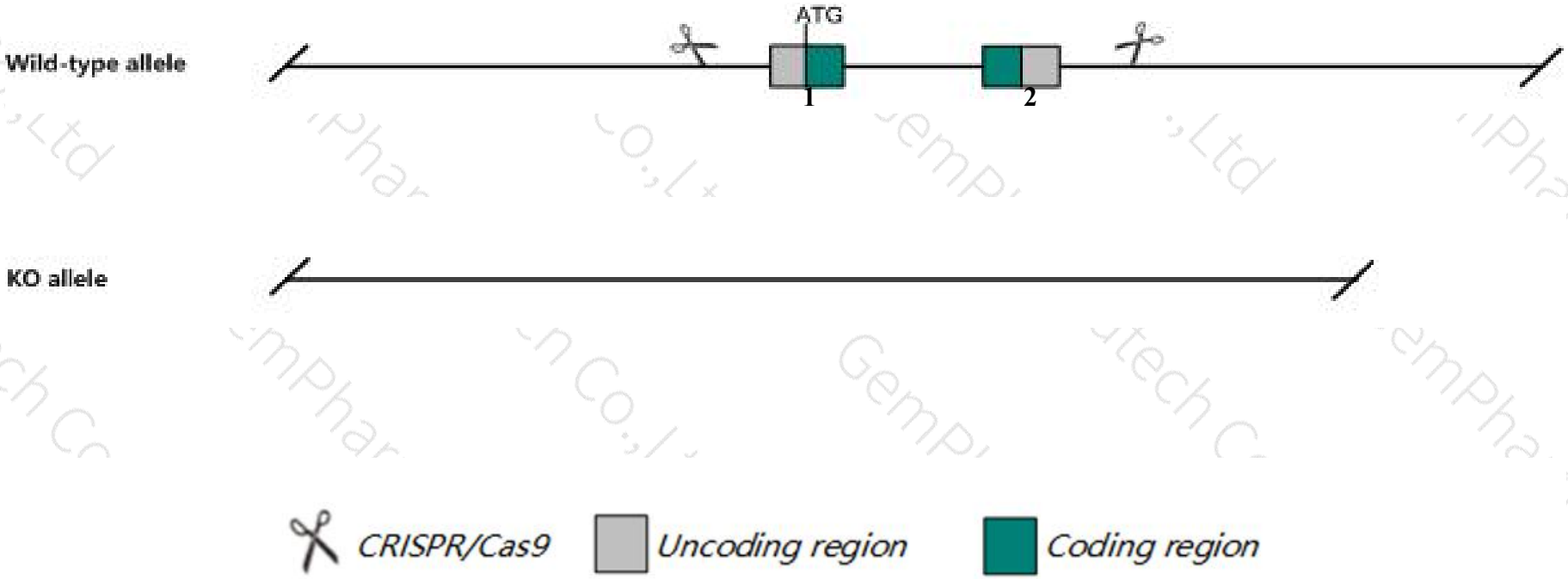
Project Overview

Project Name	***Hoxd11***
Project type	**Cas9-KO**
Strain background	**C57BL/6JGpt**

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Hoxd11* gene. The schematic diagram is as follows:



Technical routes

➢ The *Hoxd11* gene has 2 transcripts. According to the structure of *Hoxd11* gene, exon1-exon2 of *Hoxd11-202* (NSMUST00000142312.2) 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 *Hoxd11* gene. The brief process is as follows: CRISPR/Cas9 syste

Notice

- According to the existing MGI data,Homozygotes for targeted null mutations exhibit homeotic transformations of sacral vertebrae, malformations of distal limbs, and reduced fertility in males.
- *Gm28309* gene will be deleted together.
- The knockout region is near to the N-terminal of *Hoxd10* gene and C-terminal of *Hoxd12* gene,this strategy may influence the regulatory function of the N-terminal of *Hoxd10* gene and C-terminal of *Hoxd12* gene.
- The *Hoxd11* gene is located on the Chr2. 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）

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Hoxd11 homeobox D11 [*Mus musculus* (house mouse)]

Gene ID: 15431, updated on 10-Mar-2020

Summary

Official Symbol	Hoxd11 provided by MGI
Official Full Name	homeobox D11 provided by MGI
Primary source	MGI:MGI:96203
See related	Ensembl:ENSMUSG00000042499
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	Hox-4.6; Hox-5.4; Hox-5.5; E230017H14Rik
Expression	Biased expression in limb E14.5 (RPKM 8.5), subcutaneous fat pad adult (RPKM 4.6) and 5 other tissues See more
Orthologs	human all

Genomic context

Location: 2 C3; 2 44.13 cM

See Hoxd11 in Genome Data Viewer

Exon count: 3

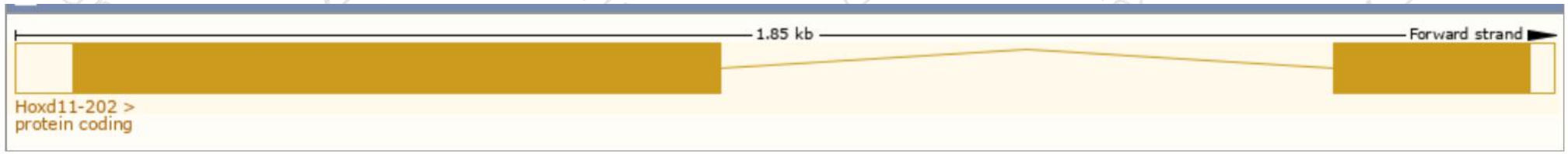
Annotation release	Status	Assembly	Chr	Location
108	current	GRCm38.p6 (GCF_000001635.26)	2	NC_000068.7 (74679558..74687016)
Build 37.2	previous assembly	MGSCv37 (GCF_000001635.18)	2	NC_000068.6 (74520450..74522195)

Transcript information（Ensembl）

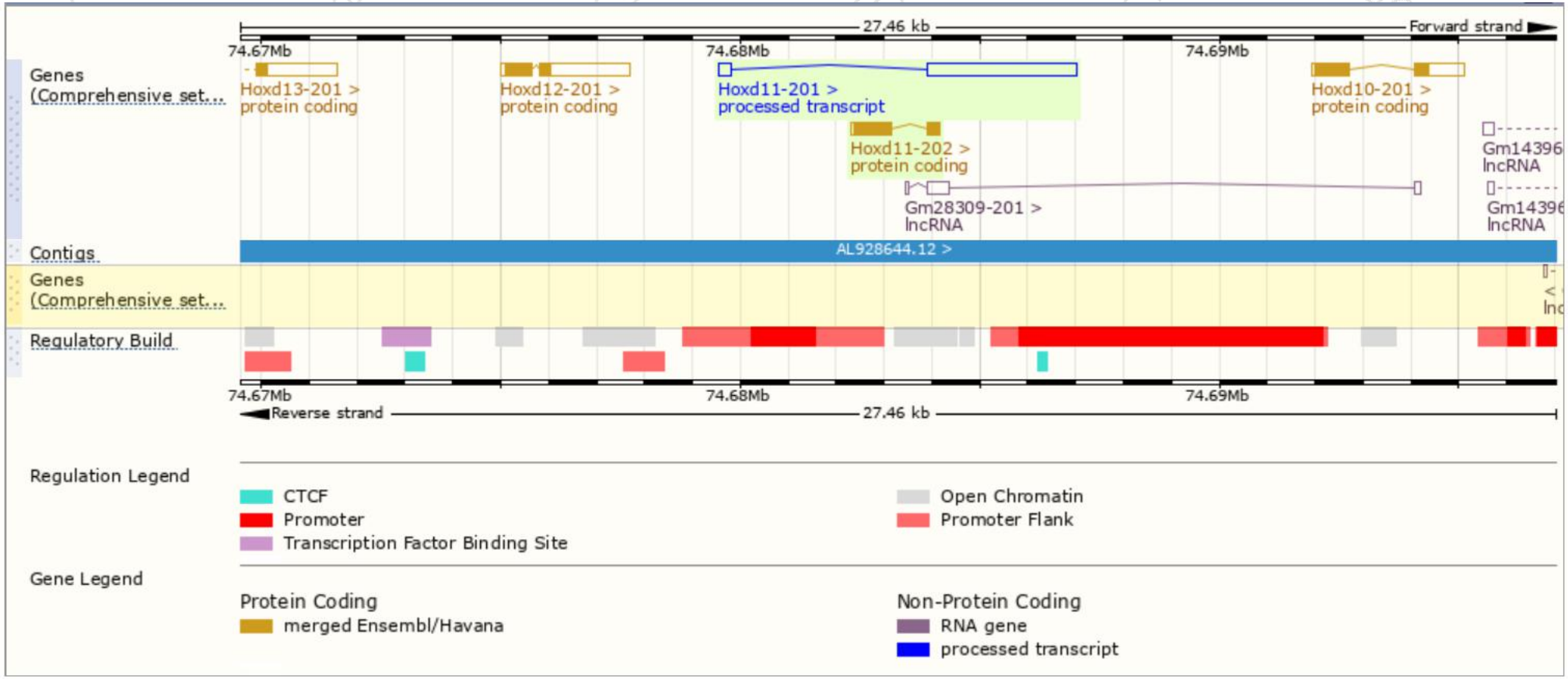
The gene has 2 transcripts,and all the transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Hoxd11-202	ENSMUST00000142312.2	1111	336aa	Protein coding	CCDS16140	A2ASM7	TSL:1 GENCODE basic APPRIS P1
Hoxd11-201	ENSMUST00000048086.8	3367	No protein	Processed transcript	-	-	TSL:1

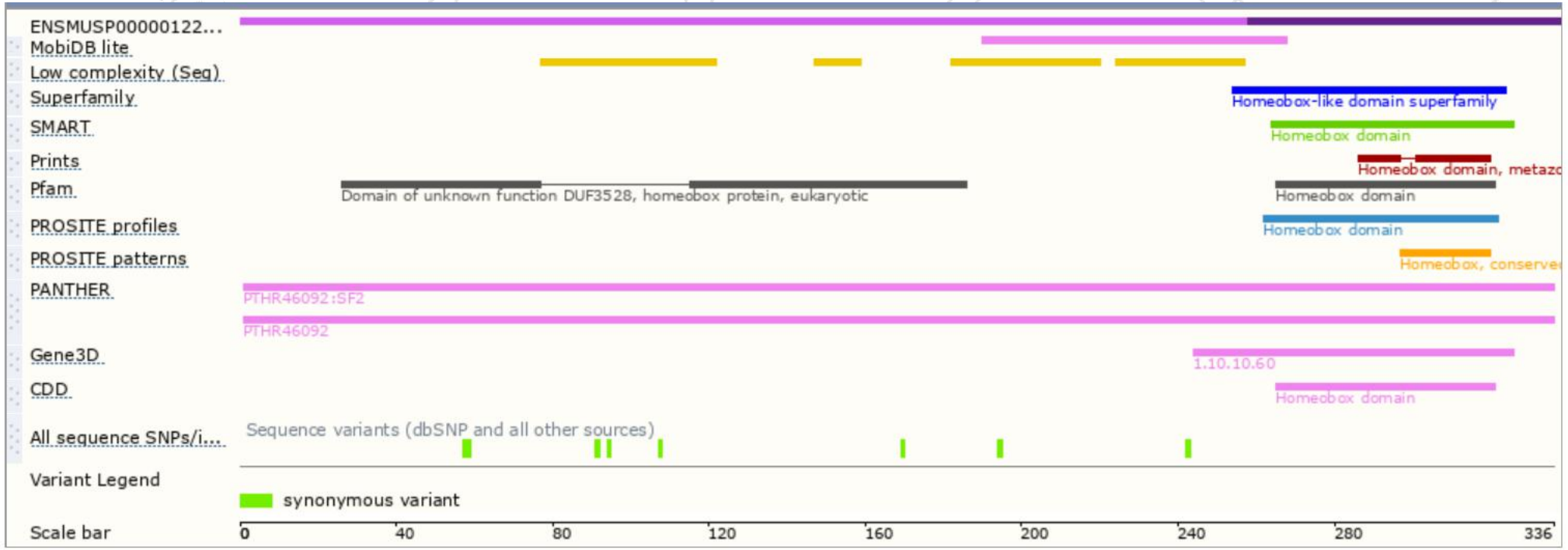
The strategy is based on the design of *Hoxd11-202* transcript,The transcription is shown below



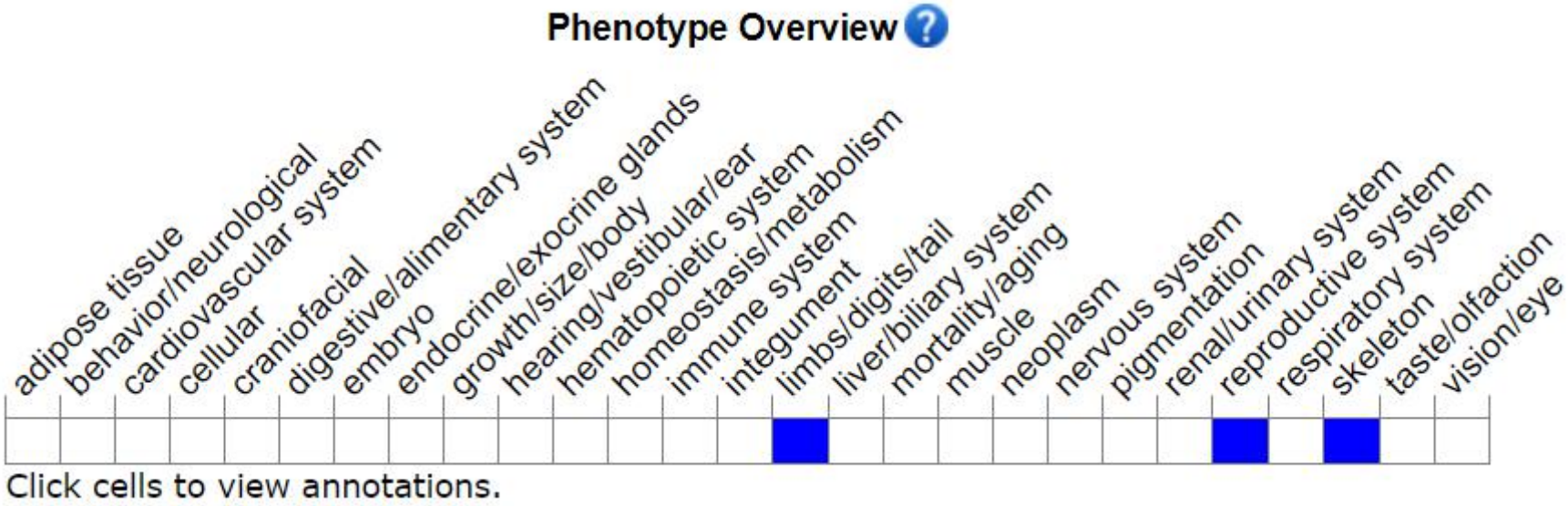
Genomic location distribution



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/).

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

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