Nsdhl Cas9-CKO Strategy

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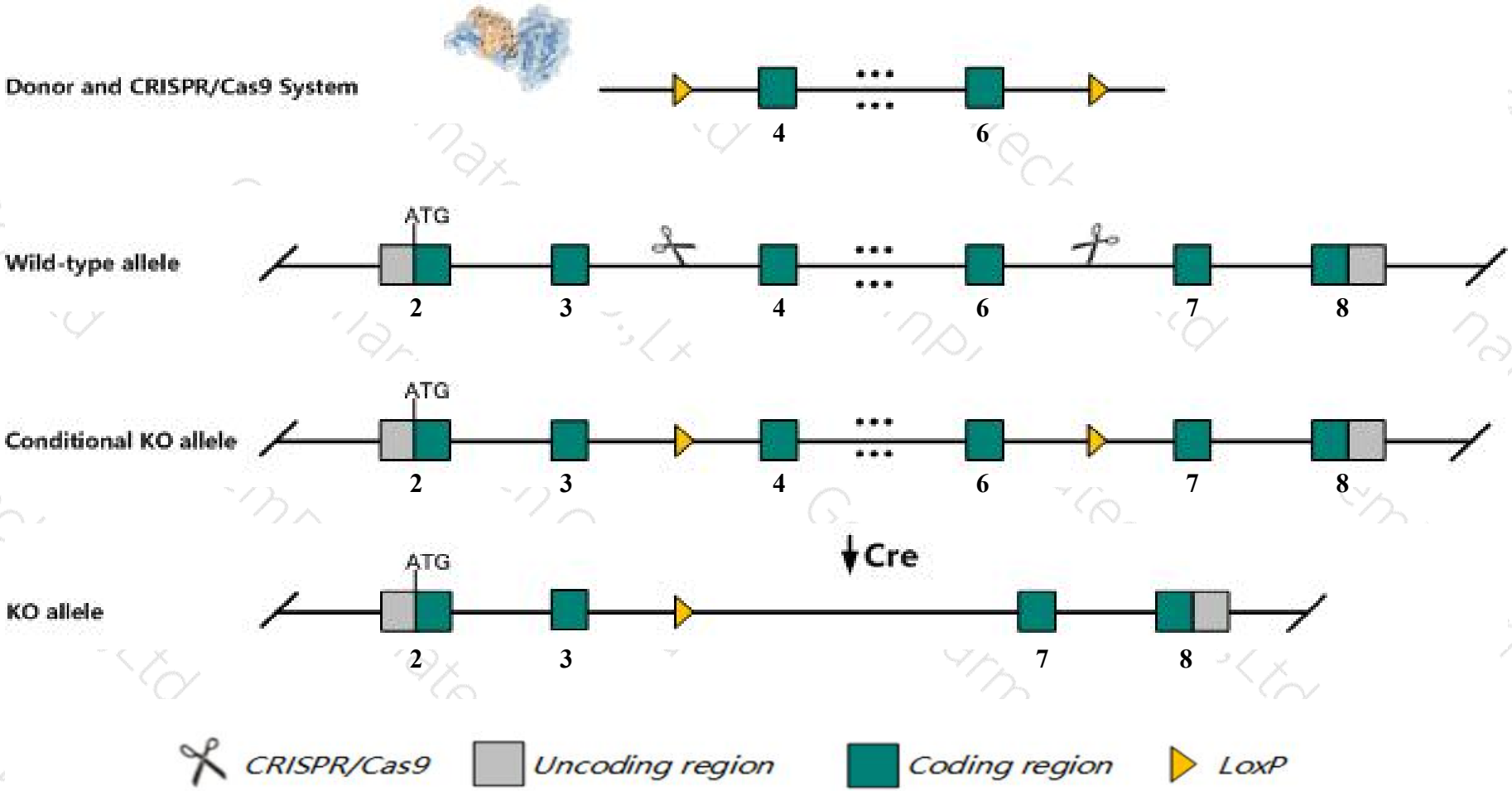
Design Date:2019-8-28

Project Overview

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

Conditional Knockout strategy

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



Technical routes

- The *Nsdhl* gene has 2 transcripts. According to the structure of *Nsdhl* gene, exon4-exon6 of *Nsdhl-201* (ENSMUST00000033715.4) transcript is recommended as the knockout region.The region contains 419bp coding sequence. Knock out the region will result in disruption of protein function.

- In this project we use CRISPR/Cas9 technology to modify *Nsdhl* 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,Heterozygous females exhibit a striped coat or skin hyperkeratotic lesions leaving bare patches on the coat, with some mutations also resulting in skeletal dysplasia and eye defects. Hemizygous male and homozygous female mice die before birth, presumably due to placental defects.

- The N-terminal of *Nsdhl* gene will remain 78aa,it may remain the partial function of *Nsdhl* gene.

- The *Nsdhl* gene is located on the ChrX. 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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Nsdhl NAD(P) dependent steroid dehydrogenase-like [*Mus musculus* (house mouse)]

Gene ID: 18194, updated on 20-Aug-2019

Summary

Official Symbol	Nsdhl provided by MGI
Official Full Name	NAD(P) dependent steroid dehydrogenase-like provided by MGI
Primary source	MGI:MGI:1099438
See related	Ensembl:ENSMUSG00000031349
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	Bpa; Str; H105E3; XAP104; AI747449
Expression	Ubiquitous expression in genital fat pad adult (RPKM 30.5), liver E18 (RPKM 28.4) and 28 other tissues See more
Orthologs	human all

Genomic context

Location: X A7.3; X 37.29 cM

See Nsdhl in Genome Data Viewer

Exon count: 8

Annotation release	Status	Assembly	Chr	Location
108	current	GRCm38.p6 (GCF_000001635.26)	X	NC_000086.7 (72918521..72958528)
Build 37.2	previous assembly	MGSCv37 (GCF_000001635.18)	X	NC_000086.6 (70163860..70203867)

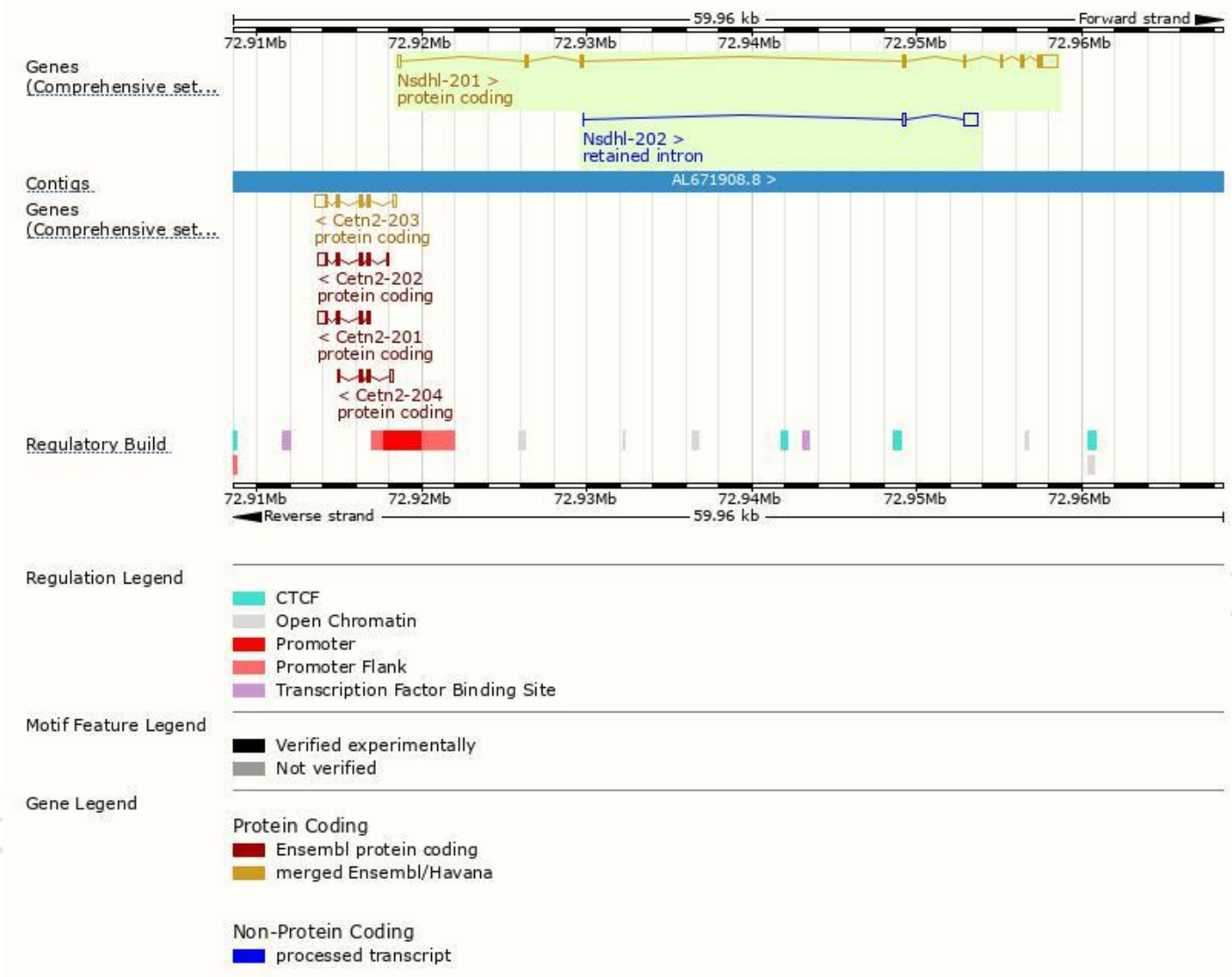
Transcript information（Ensembl）

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

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Nsdhl-201	ENSMUST00000033715.4	2168	362aa	Protein coding	CCDS30190	Q3US15 Q9R1J0	TSL:1 GENCODE basic APPRIS P1
Nsdhl-202	ENSMUST00000155663.1	992	No protein	Retained intron	-	-	TSL:3

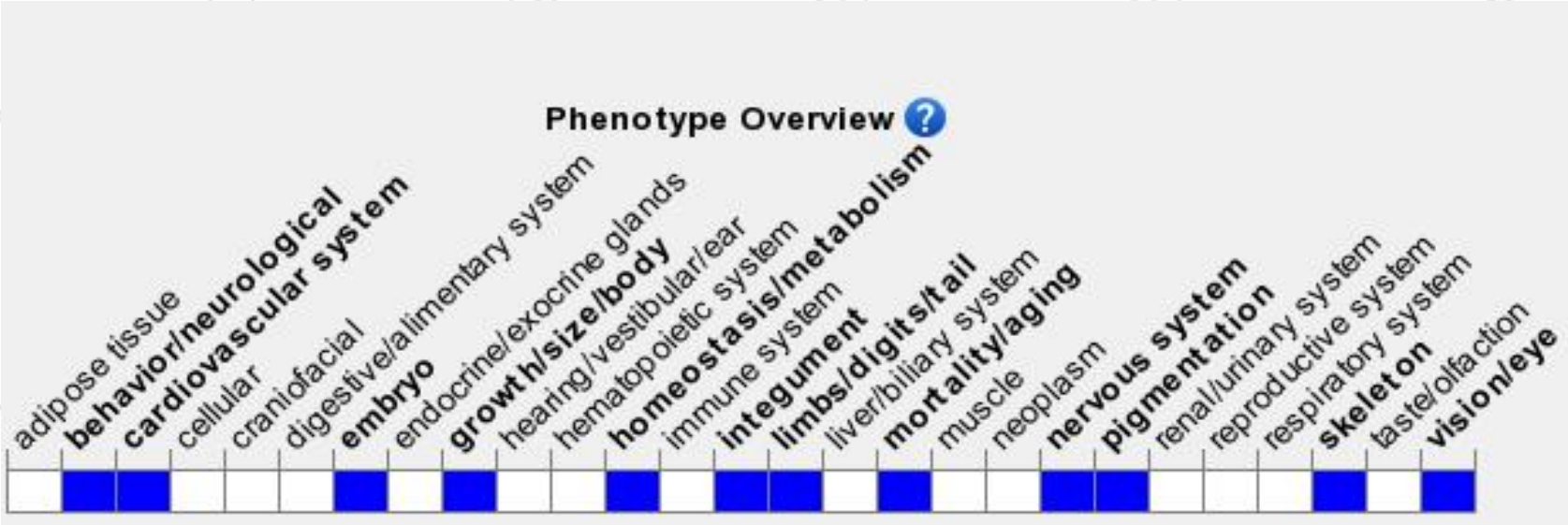
The strategy is based on the design of *Nsdhl-201* transcript,The transcription is shown below

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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