

Ndst1 Cas9-CKO Strategy

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Project Overview

Project Name

Ndst1

Project type

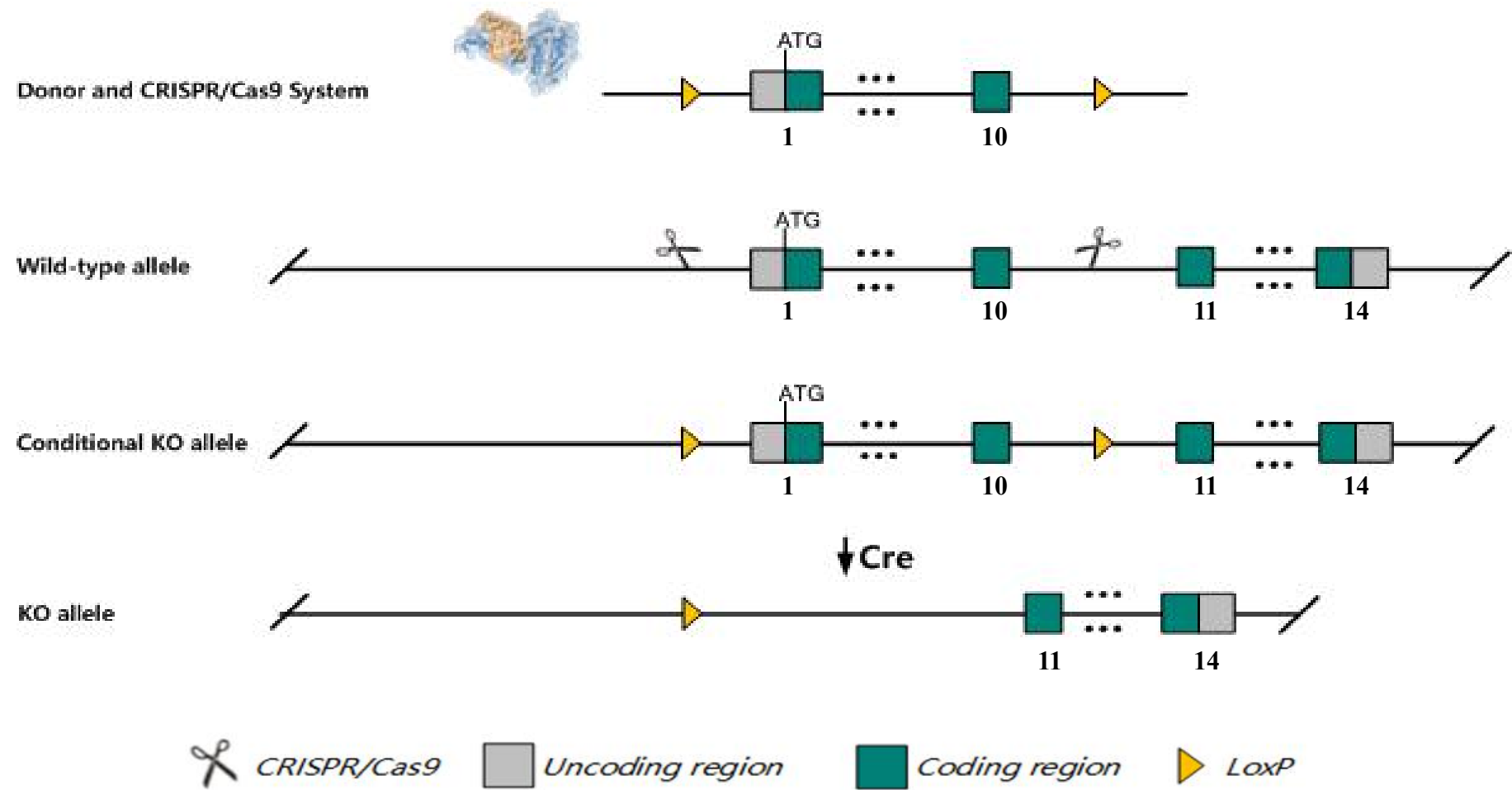
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Ndst1* gene. The schematic diagram is as follows:



The *Ndst1* gene has 6 transcripts. According to the structure of *Ndst1* gene, exon1-exon10 of *Ndst1-201* (ENSMUST00000169273.1) 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 *Ndst1* 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.

According to the existing MGI data, Mice homozygous for disruptions in this gene die late in gestation or neonatally. Lungs fail to inflate and mice born alive experience respiratory distress and failure.

The *Ndst1* gene is located on the Chr18. 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.

Ndst1 N-deacetylase/N-sulfotransferase (heparan glucosaminyl) 1 [Mus musculus (house mouse)]

Gene ID: 15531, updated on 12-Mar-2019

Summary

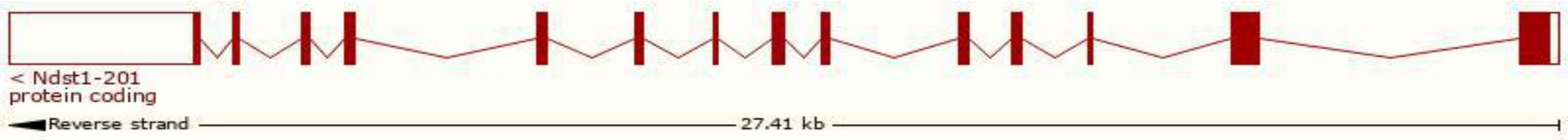
Official Symbol	Ndst1 provided by MGI
Official Full Name	N-deacetylase/N-sulfotransferase (heparan glucosaminyl) 1 provided by MGI
Primary source	MGI:MGI:104719
See related	Ensembl:ENSMUSG00000054008
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	1200015G06Rik, HSNST, HSNST 1, Hsst, N-HSST, N-HSST 1, NDST-1, b2b2230Clo
Expression	Ubiquitous expression in lung adult (RPKM 78.1), adrenal adult (RPKM 46.2) and 25 other tissues See more
Orthologs	human all

Transcript information Ensembl

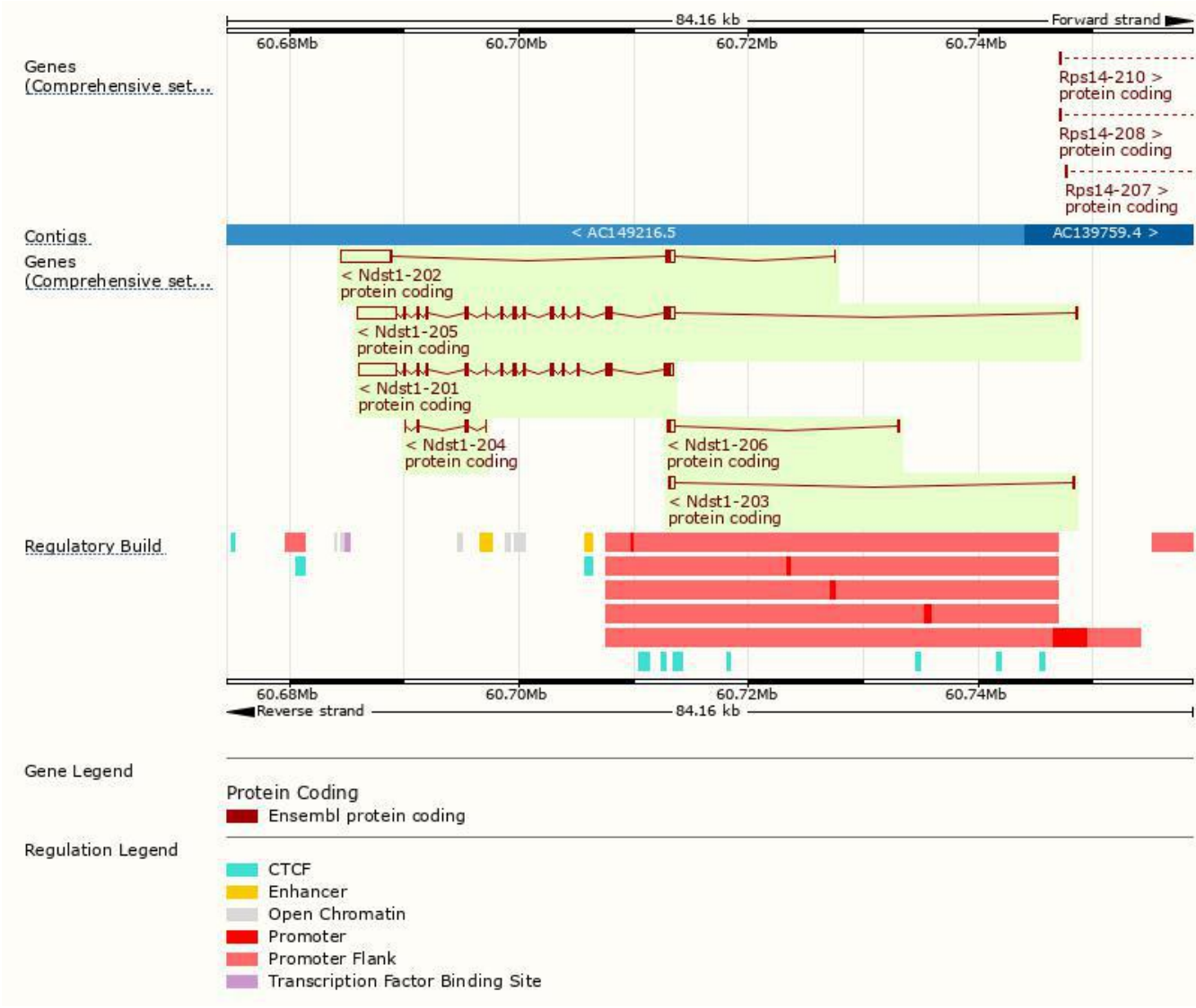
The gene has 6 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Ndst1-205	ENSMUST00000237783.1	6478	882aa	Protein coding	CCDS37834	-	GENCODE basic APPRIS P1
Ndst1-201	ENSMUST00000169273.1	6070	882aa	Protein coding	CCDS37834	Q3UHN9	TSL:1 GENCODE basic APPRIS P1
Ndst1-202	ENSMUST00000235795.1	5262	185aa	Protein coding	-	-	GENCODE basic
Ndst1-206	ENSMUST00000237885.1	828	96aa	Protein coding	-	-	CDS 3' incomplete
Ndst1-203	ENSMUST00000237070.1	697	64aa	Protein coding	-	-	CDS 3' incomplete
Ndst1-204	ENSMUST00000237572.1	301	101aa	Protein coding	-	-	5' and 3' truncations in transcript evidence prevent annotation of the start and the end of the CDS. CDS 5' and 3' incomplete

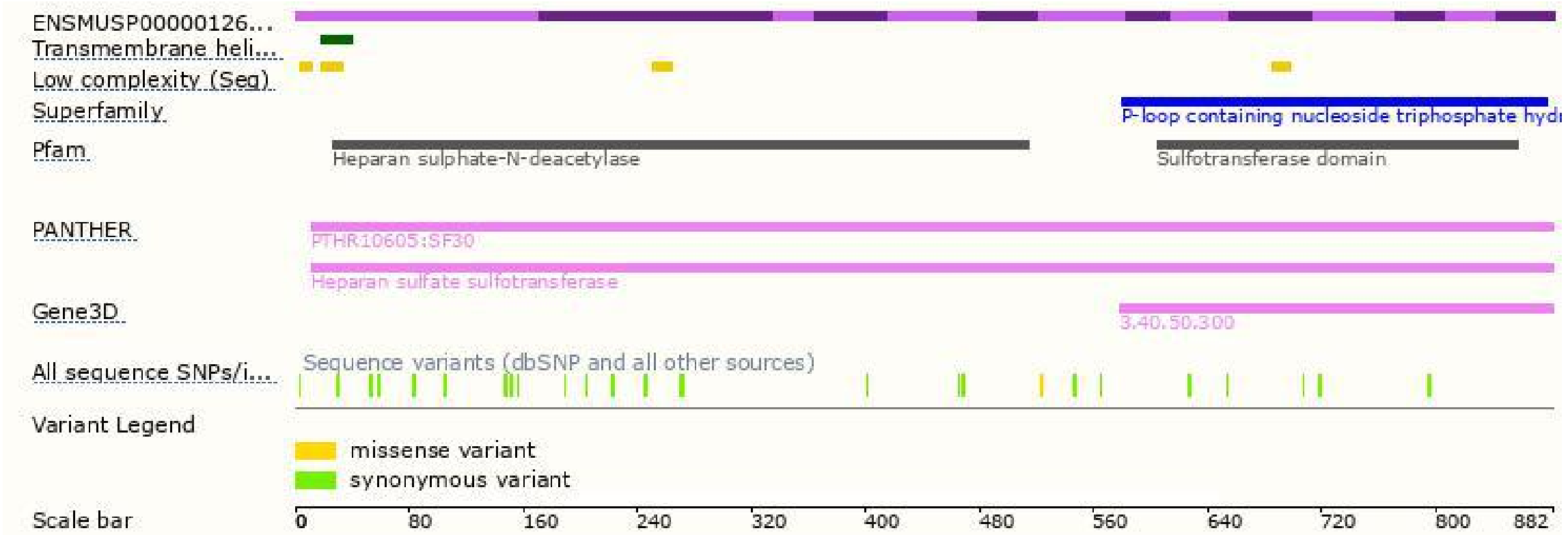
The strategy is based on the design of *Ndst1-201* transcript,The transcription is shown below



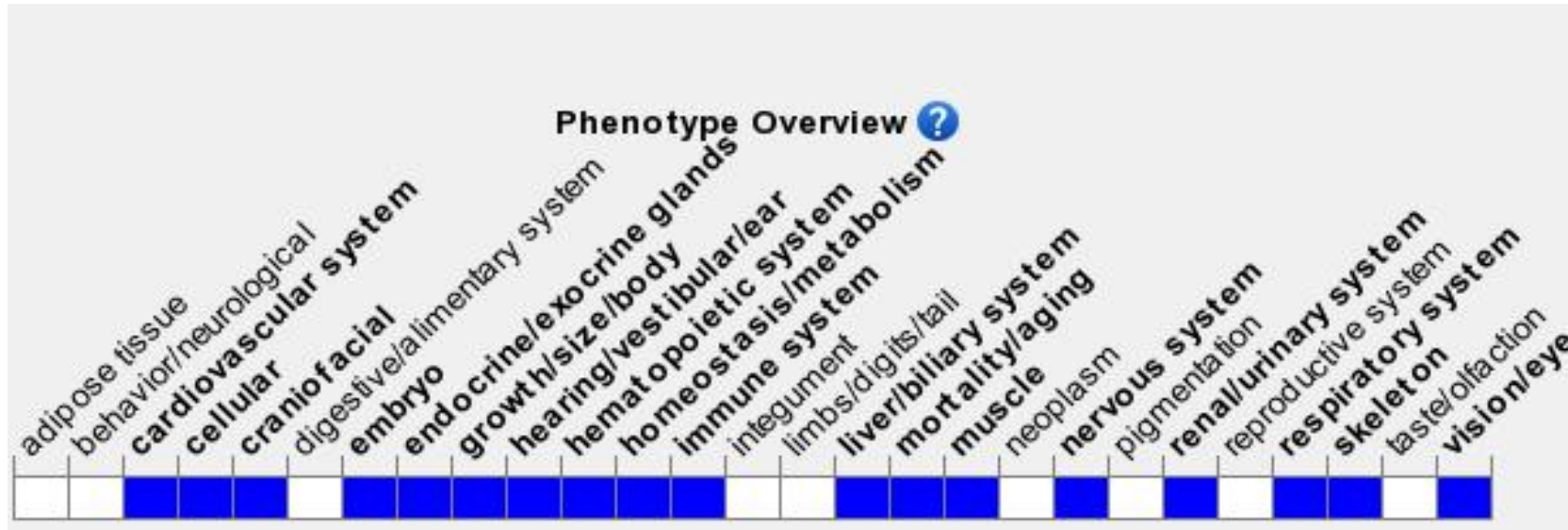
Genomic location distribution



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/>).

According to the existing MGI data, Mice homozygous for disruptions in this gene die late in gestation or neonatally.

Lungs fail to inflate and mice born alive experience respiratory distress and failure.

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