

Esrrb Cas9-CKO Strategy

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Project Overview

Project Name

Esrrb

Project type

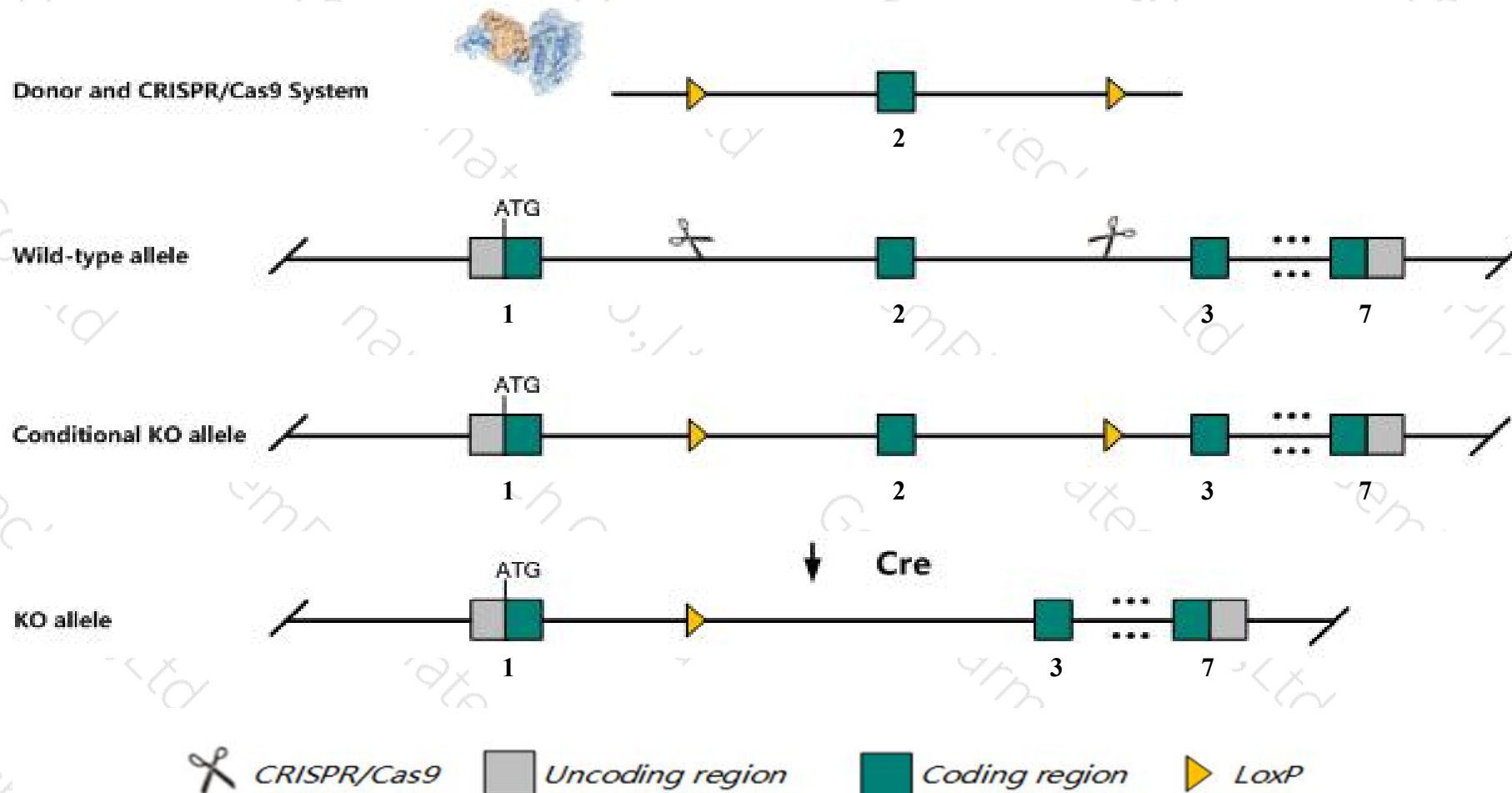
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

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



Technical routes

- The *Esrrb* gene has 6 transcripts. According to the structure of *Esrrb* gene, exon2 of *Esrrb*-203(ENSMUST00000110204.8) transcript is recommended as the knockout region. The region contains 410bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Esrrb* gene. The brief process is as follows: gRNA was transcribed in vitro, donor was constructed. Cas9, gRNA 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 as embryos around E9.5 or E10.5 as a result of failure of the chorion to develop and subsequent placental defects.
- The *Esrrb* gene is located on the Chr12. 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)

Esrrb estrogen related receptor, beta [Mus musculus (house mouse)]

Gene ID: 26380, updated on 13-Mar-2020

Summary



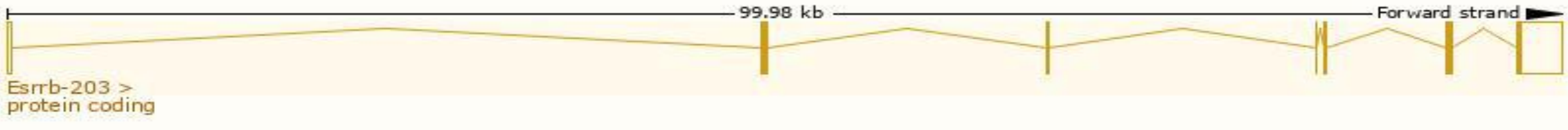
Official Symbol	Esrrb provided by MGI
Official Full Name	estrogen related receptor, beta provided by MGI
Primary source	MGI:MGI:1346832
See related	Ensembl:ENSMUSG00000021255
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	Err2, Errb, Estrrb, Nr3b2
Expression	Biased expression in kidney adult (RPKM 6.2), heart adult (RPKM 4.9) and 12 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

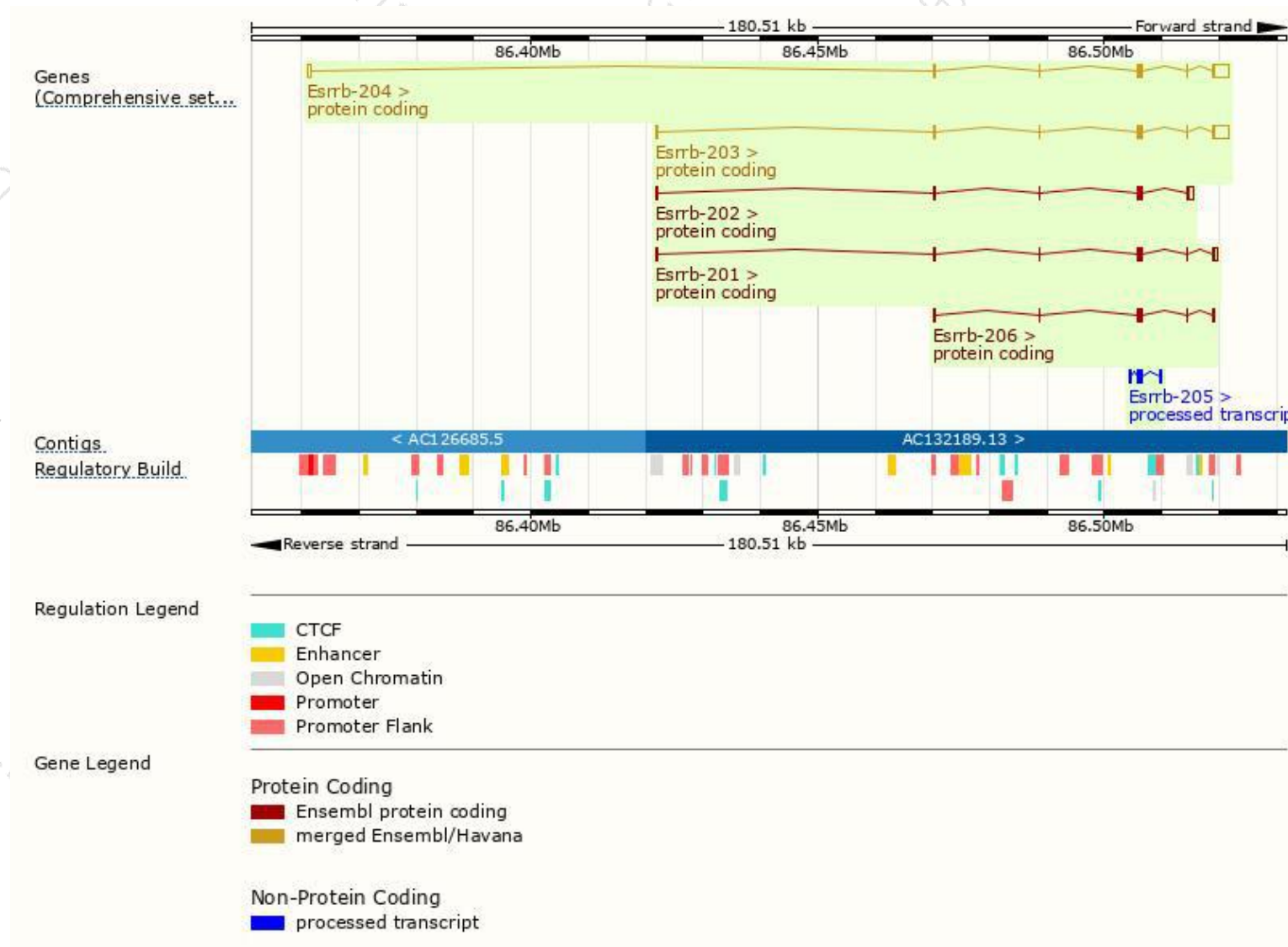
The gene has 6 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Esrrb-204	ENSMUST00000116402.9	4300	438aa	Protein coding	CCDS49117	E9QKA2	TSL:1 GENCODE basic APPRIS ALT2
Esrrb-203	ENSMUST00000110204.8	4196	454aa	Protein coding	CCDS26066	G5E8P8	TSL:1 GENCODE basic APPRIS P3
Esrrb-202	ENSMUST00000110203.7	2363	378aa	Protein coding	-	D3YW03	TSL:1 GENCODE basic
Esrrb-201	ENSMUST00000021680.11	2136	433aa	Protein coding	-	Q61539	TSL:5 GENCODE basic
Esrrb-206	ENSMUST00000167891.1	1344	433aa	Protein coding	-	Q61539	TSL:1 GENCODE basic
Esrrb-205	ENSMUST00000136464.2	694	No protein	Processed transcript	-	-	TSL:2

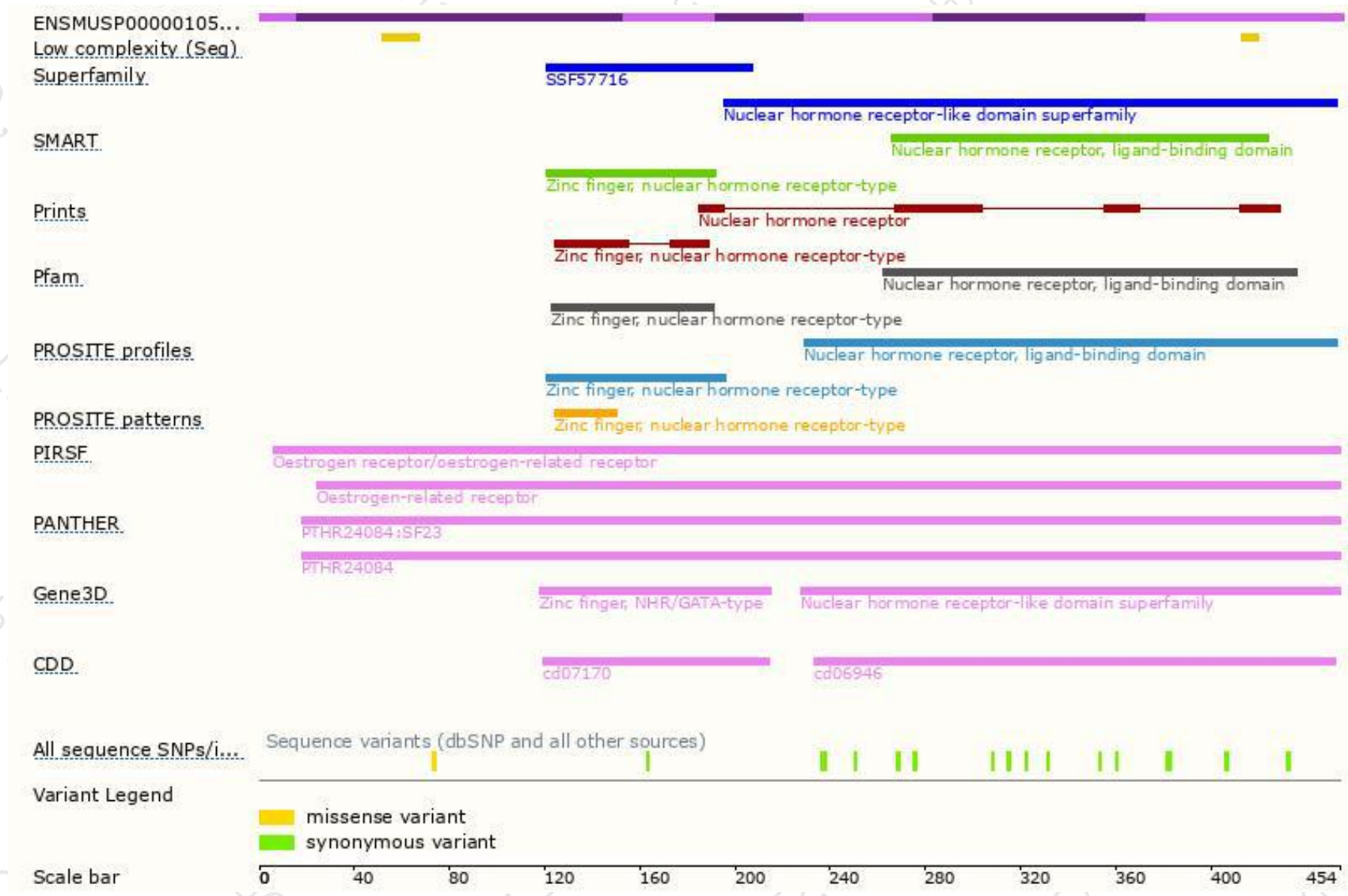
The strategy is based on the design of *Esrrb-203* transcript,the transcription is shown below:



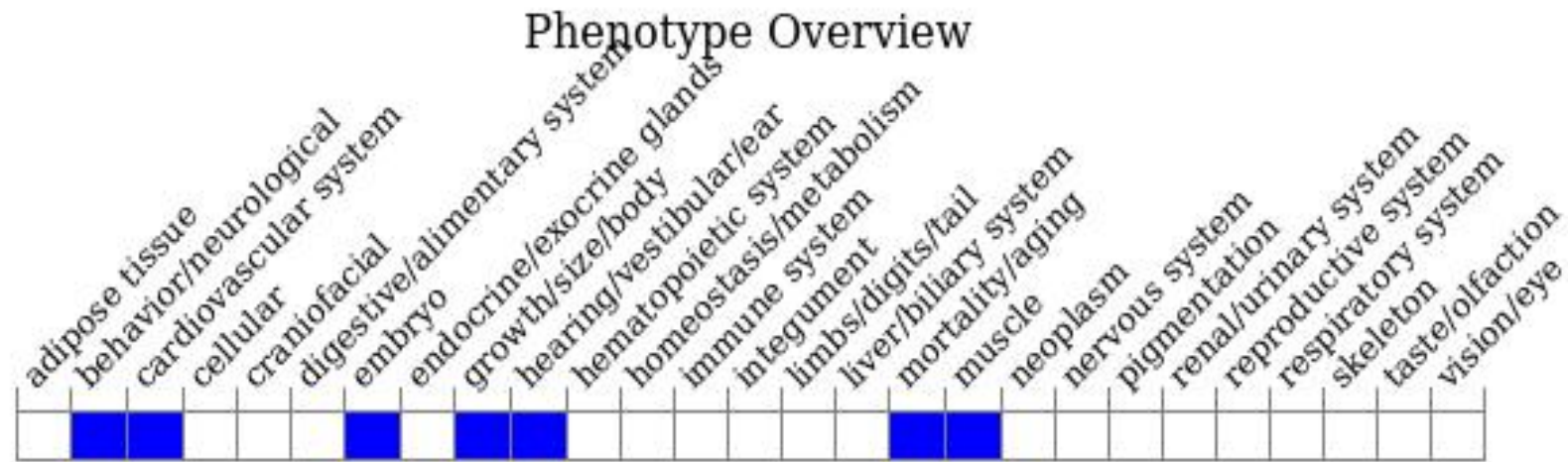
Genomic location distribution



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 as embryos around E9.5 or E10.5 as a result of failure of the chorion to develop and subsequent placental defects.

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

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