

Ncapg2 Cas9-CKO Strategy

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Project Overview

Project Name

Ncapg2

Project type

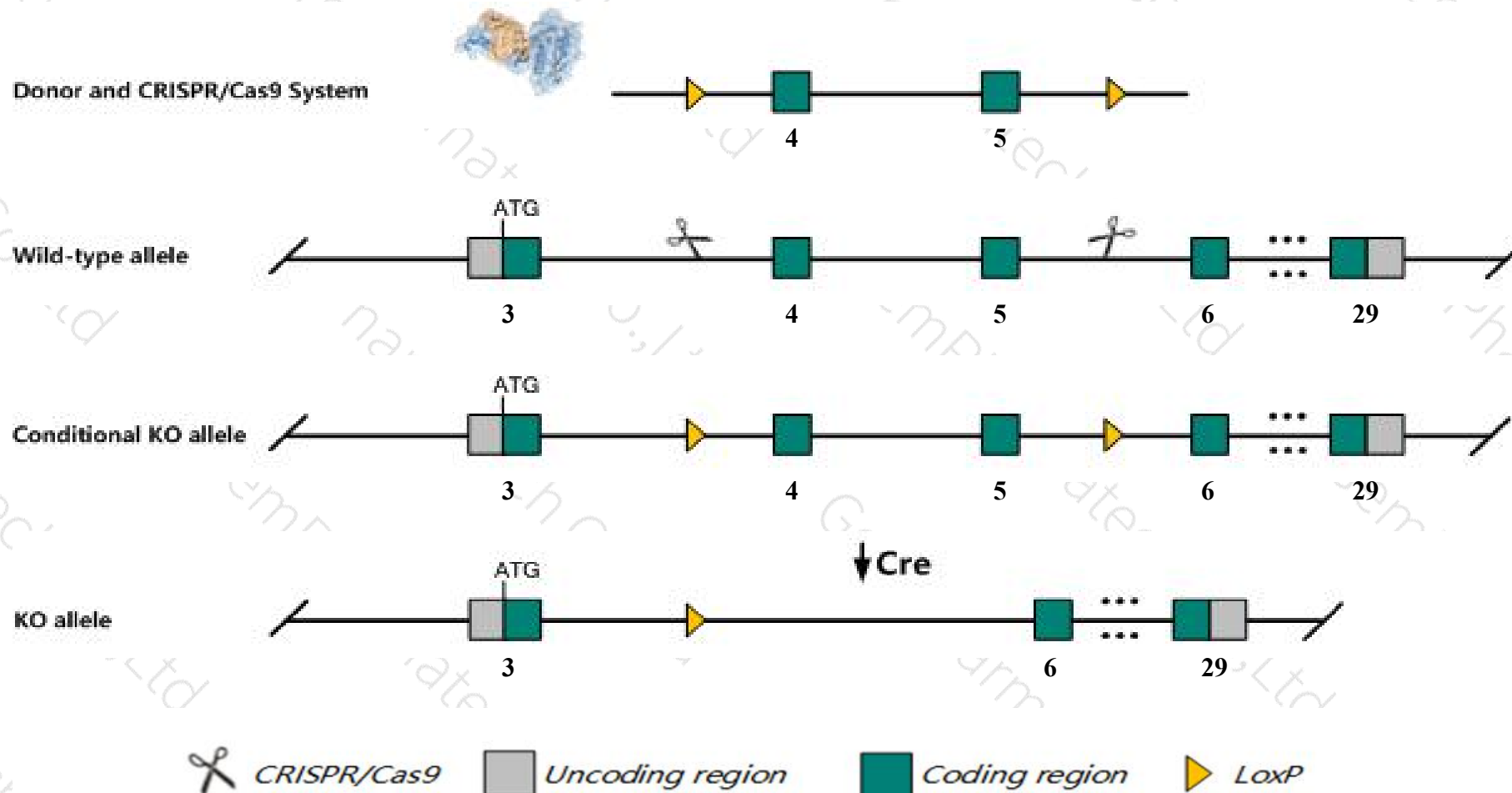
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Ncapg2* gene. The schematic diagram is as follows:



Technical routes

- The *Ncapg2* gene has 6 transcripts. According to the structure of *Ncapg2* gene, exon4-exon5 of *Ncapg2*-201(ENSMUST00000084828.4) transcript is recommended as the knockout region. The region contains 304bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Ncapg2* 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, homozygous null embryos exhibit impaired inner cell mass expansion and die shortly after implantation and prior to gastrulation and blood cell development.
- Transcript 203,204,205 CDS 3' incomplete the influences is unknown.
- The *Ncapg2* 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)

Ncapg2 non-SMC condensin II complex, subunit G2 [Mus musculus (house mouse)]

Gene ID: 76044, updated on 13-Mar-2020

Summary



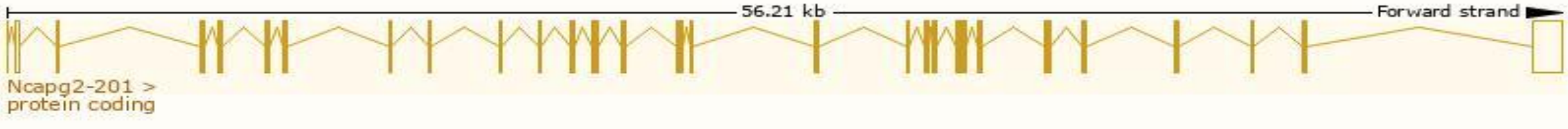
Official Symbol	Ncapg2 provided by MGI
Official Full Name	non-SMC condensin II complex, subunit G2 provided by MGI
Primary source	MGI:MGI:1923294
See related	Ensembl:ENSMUSG00000042029
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	5830426I05Rik, CAP-G2, Luzp5, Mtb, mCAP-G2
Expression	Biased expression in liver E14 (RPKM 10.5), liver E14.5 (RPKM 8.0) and 13 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

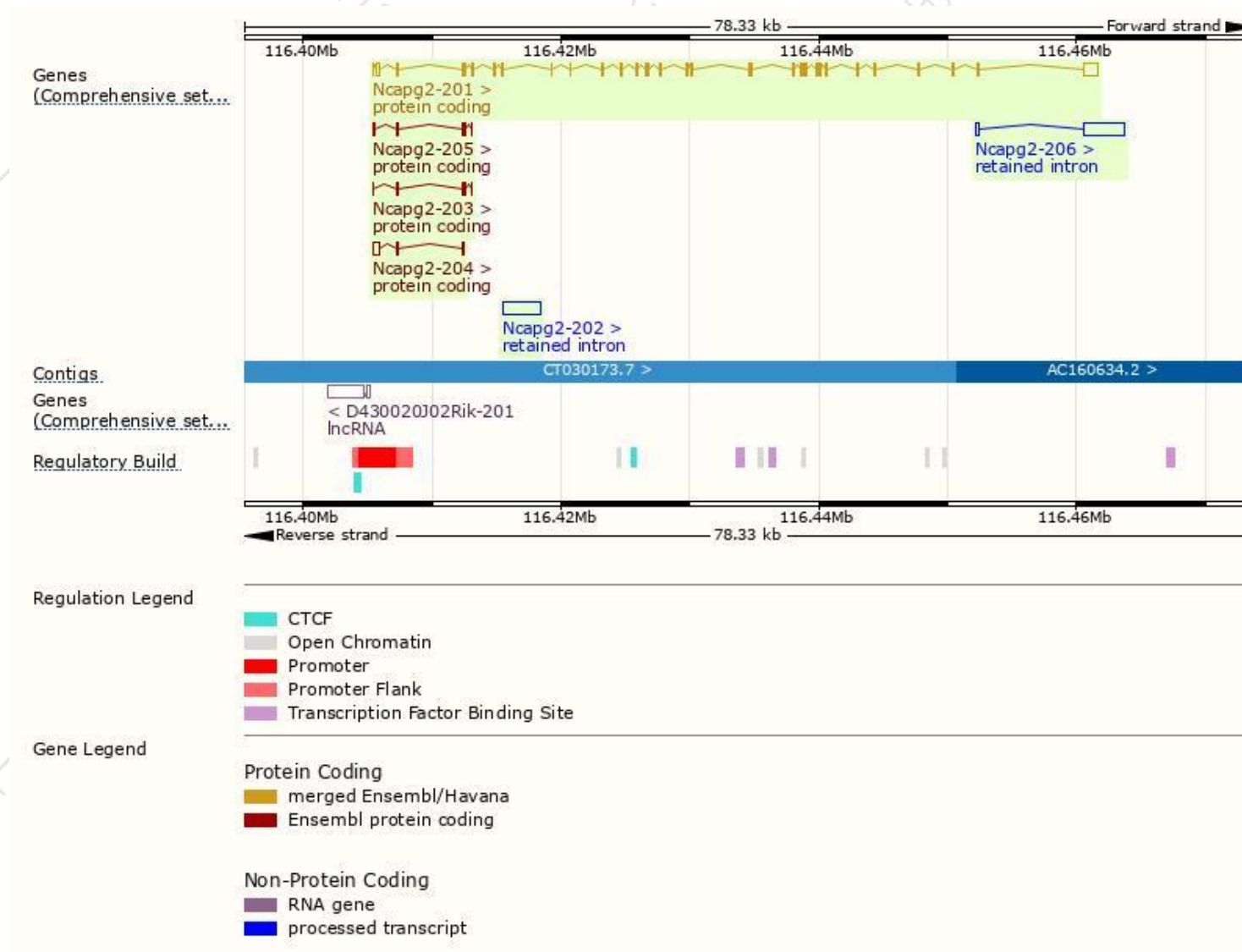
The gene has 6 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Ncapg2-201	ENSMUST00000084828.4	4684	1138aa	Protein coding	CCDS26212	Q6DFV1	TSL:5 GENCODE basic APPRIS P1
Ncapg2-204	ENSMUST00000221970.1	678	66aa	Protein coding	-	A0A1Y7VP55	CDS 3' incomplete TSL:3
Ncapg2-205	ENSMUST00000222469.1	446	111aa	Protein coding	-	A0A1Y7VLA8	CDS 3' incomplete TSL:3
Ncapg2-203	ENSMUST00000221114.1	397	107aa	Protein coding	-	A0A1Y7VJK1	CDS 3' incomplete TSL:3
Ncapg2-206	ENSMUST00000222761.1	3355	No protein	Retained intron	-	-	TSL:1
Ncapg2-202	ENSMUST00000220608.1	2808	No protein	Retained intron	-	-	TSL:NA

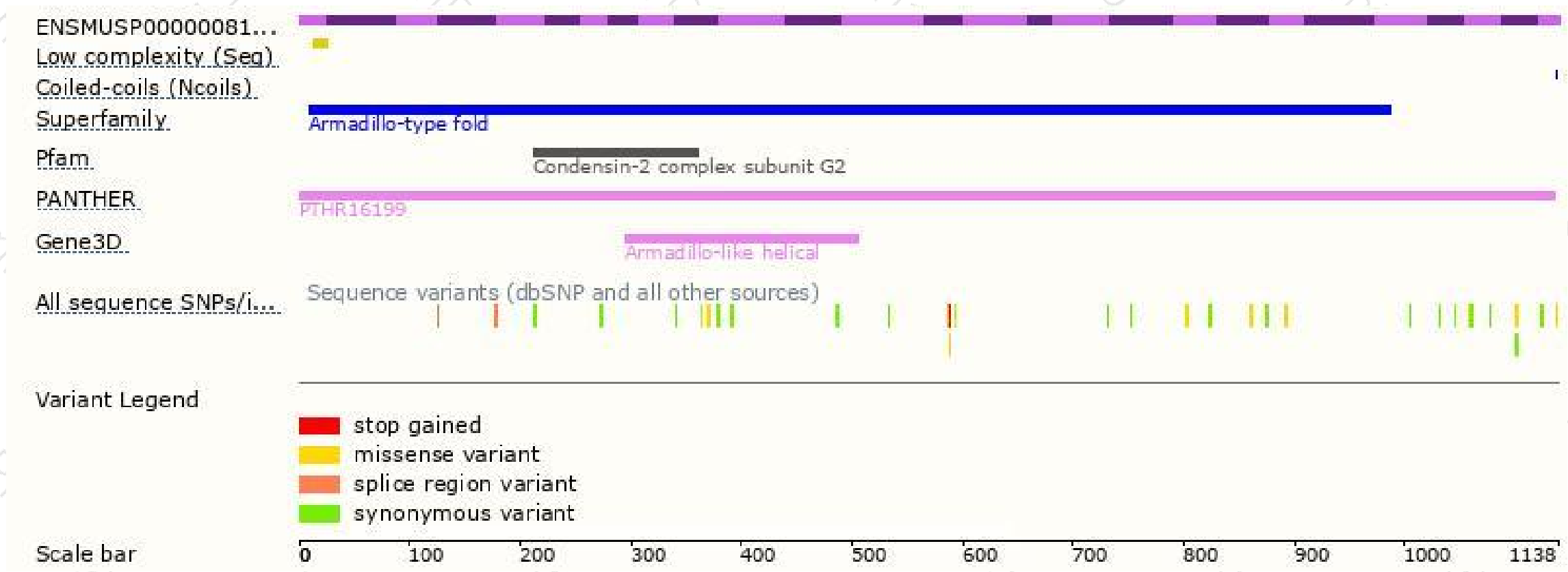
The strategy is based on the design of *Ncapg2-201* transcript,the transcription is shown below:



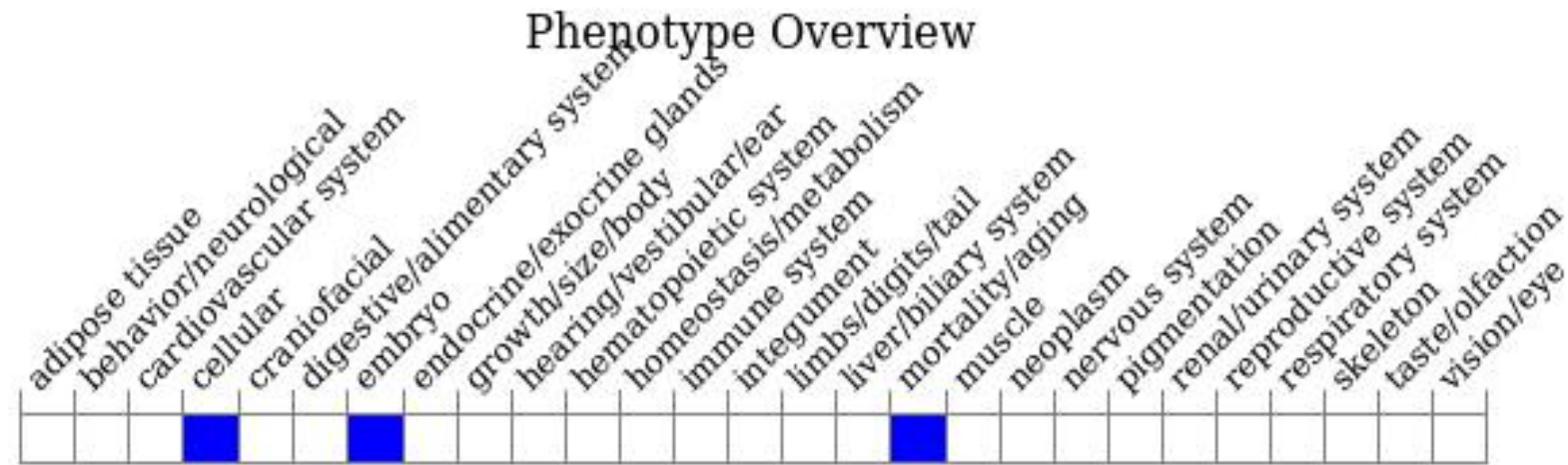
Genomic location distribution



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, homozygous null embryos exhibit impaired inner cell mass expansion and die shortly after implantation and prior to gastrulation and blood cell development.

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

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