

Epcam Cas9-KO Strategy

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Project Overview



Project Name

Epcam

Project type

Cas9-KO

Strain background

C57BL/6JGpt

Knockout strategy

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



- The *Epcam* gene has 5 transcripts. According to the structure of *Epcam* gene, exon3-exon6 of *Epcam-201* (ENSMUST00000053577.8) transcript is recommended as the knockout region. The region contains 479bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Epcam* gene. The brief process is as follows: CRISPR/Cas9 system

- According to the existing MGI data, Homozygous null mice display embryonic lethality during organogenesis with decreased embryo size, impaired labyrinth layer development and decreased number of trophoblast giant cells. Mice homozygous for another knock-out allele exhibit impaired intestinal tight junctions with lethality.
- The *Epcam* gene is located on the Chr17. 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)

Epcam epithelial cell adhesion molecule [Mus musculus (house mouse)]

Gene ID: 17075, updated on 2-Apr-2019

Summary



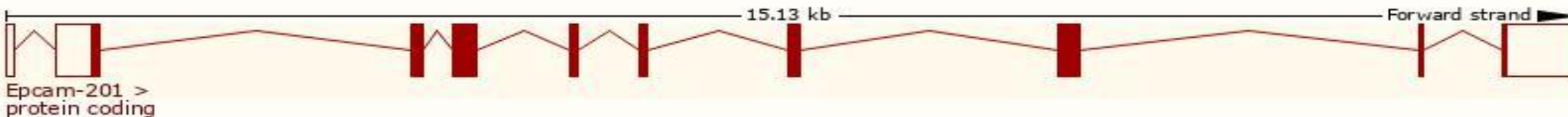
Official Symbol	Epcam provided by MGI
Official Full Name	epithelial cell adhesion molecule provided by MGI
Primary source	MGI:MGI:106653
See related	Ensembl:ENSMUSG00000045394
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	CD326, EGP, EGP-2, Egp314, Ep-CAM, EpCAM1, GA733-2, Ly74, TROP1, Tacsd1, Tacstd1, gp40
Expression	Biased expression in small intestine adult (RPKM 346.5), colon adult (RPKM 315.1) and 8 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

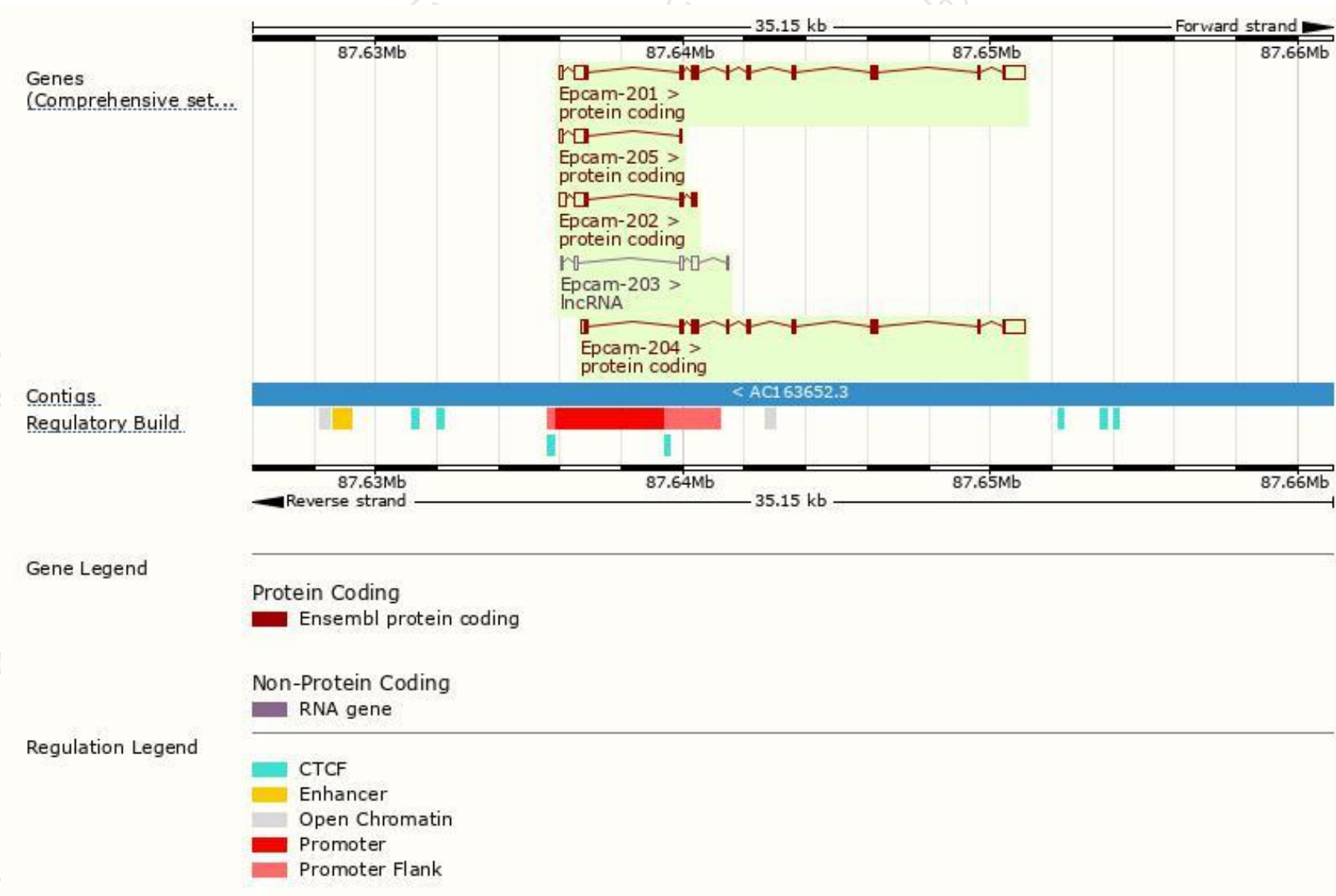
The gene has 5 transcripts, all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Epcam-201	ENSMUST00000053577.8	2040	315aa	Protein coding	CCDS29018	Q99JW5	TSL:5 GENCODE basic APPRIS P1
Epcam-204	ENSMUST00000234623.1	1745	315aa	Protein coding	CCDS29018	-	GENCODE basic APPRIS P1
Epcam-202	ENSMUST00000234009.1	904	111aa	Protein coding	-	-	CDS 3' incomplete
Epcam-205	ENSMUST00000235125.1	600	48aa	Protein coding	-	-	CDS 3' incomplete
Epcam-203	ENSMUST00000234354.1	581	No protein	lncRNA	-	-	

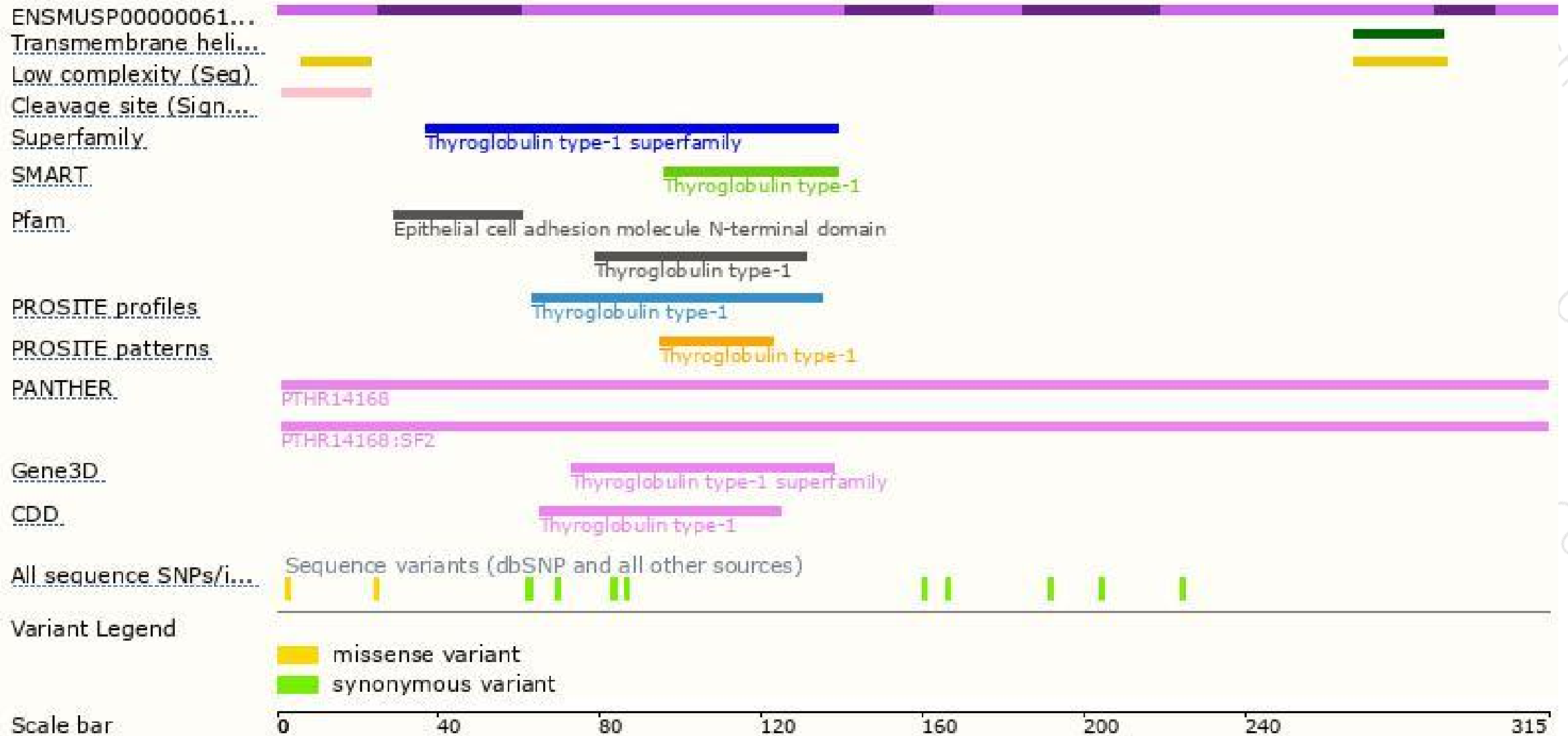
The strategy is based on the design of *Epcam-201* transcript, The transcription is shown below



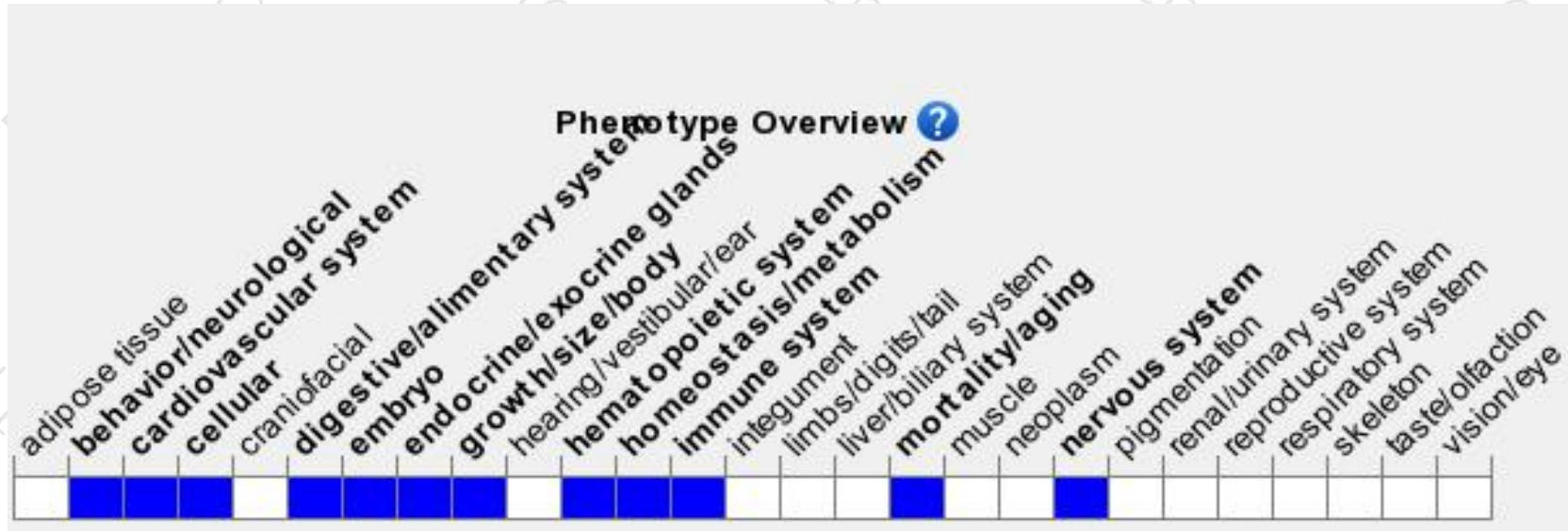
Genomic location distribution



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 mice display embryonic lethality during organogenesis with decreased embryo size, impaired labyrinth layer development and decreased number of trophoblast giant cells. Mice homozygous for another knock-out allele exhibit impaired intestinal tight junctions with lethality.

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

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