

Epha7 Cas9-KO Strategy

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Project Overview

Project Name

Epha7

Project type

Cas9-KO

Strain background

C57BL/6JGpt

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Epha7* gene. The schematic diagram is as follows:



- The *Epha7* gene has 8 transcripts. According to the structure of *Epha7* gene, exon3-exon5 of *Epha7-201* (ENSMUST00000029964.11) transcript is recommended as the knockout region. The region contains 1162bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Epha7* gene. The brief process is as follows: CRISPR/Cas9 system w

- According to the existing MGI data, Some homozygous mutants display anencephaly. Mutants also exhibit increased proliferation of neural progenitor cells in the lateral ventricle wall of the adult brain.
- The knockout region is near to the N-terminal of *Gm11915* gene, this strategy may influence the regulatory function of the N-terminal of *Gm11915* gene.
- The *Epha7* gene is located on the Chr4. 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)

Epha7 Eph receptor A7 [*Mus musculus* (house mouse)]

Gene ID: 13841, updated on 3-Sep-2019

Summary

Official Symbol Epha7 provided by [MGI](#)
Official Full Name Eph receptor A7 provided by [MGI](#)
Primary source [MGI:MGI:95276](#)
See related [Ensembl:ENSMUSG00000028289](#)
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 Ebk; Ehk3; Mdk1; Cek11; Hek11
Expression Biased expression in CNS E18 (RPKM 6.7), CNS E11.5 (RPKM 6.2) and 10 other tissues [See more](#)
Orthologs [human](#) [all](#)

Genomic context

Location: 4 A4; 4 12.42 cM

See Epha7 in [Genome Data Viewer](#)

Exon count: 20

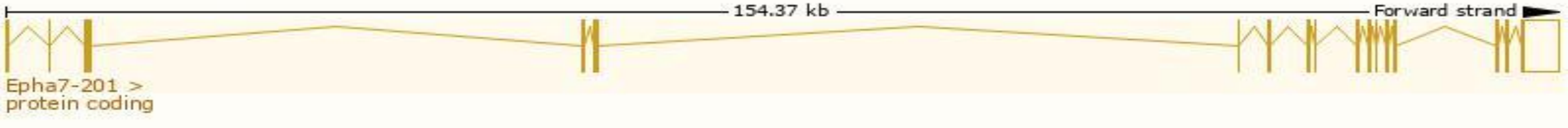
Annotation release	Status	Assembly	Chr	Location
108	current	GRCm38.p6 (GCF_000001635.26)	4	NC_000070.6 (28813066..28967503)
Build 37.2	previous assembly	MGSCv37 (GCF_000001635.18)	4	NC_000070.5 (28740295..28894649)

Transcript information (Ensembl)

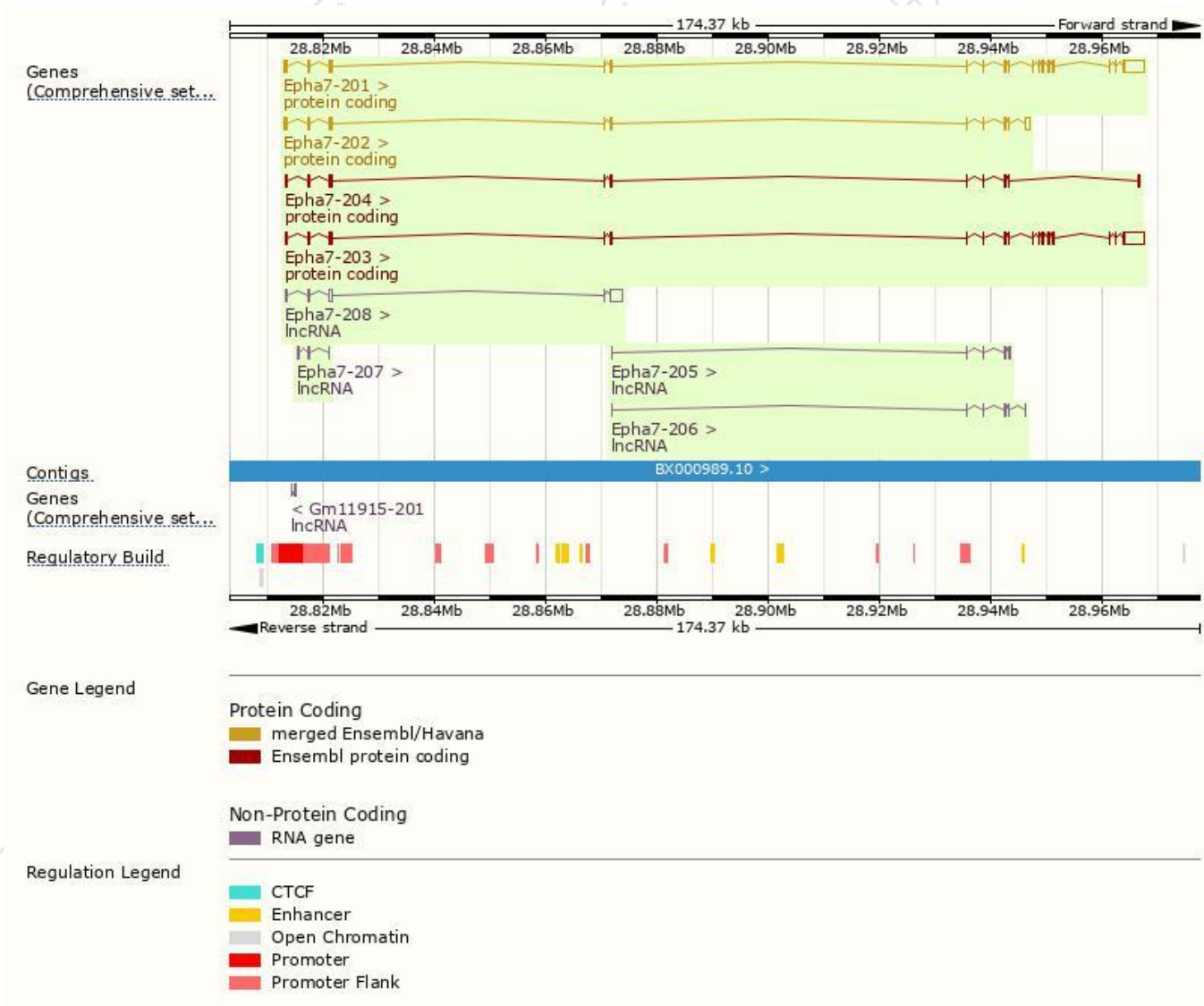
The gene has 8 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Epha7-201	ENSMUST00000029964.11	6746	998aa	Protein coding	CCDS18013	Q61772	TSL:1 GENCODE basic APPRIS P3
Epha7-203	ENSMUST00000108191.1	6615	994aa	Protein coding	CCDS71353	A2BDQ4	TSL:1 GENCODE basic APPRIS ALT 1
Epha7-202	ENSMUST00000080934.10	2880	610aa	Protein coding	CCDS51132	Q61772 Q8CC52	TSL:1 GENCODE basic
Epha7-204	ENSMUST00000108194.8	2323	626aa	Protein coding	-	Q61772	TSL:1 GENCODE basic
Epha7-208	ENSMUST00000149030.7	3187	No protein	lncRNA	-	-	TSL:1
Epha7-205	ENSMUST00000129029.7	737	No protein	lncRNA	-	-	TSL:3
Epha7-206	ENSMUST00000129912.1	648	No protein	lncRNA	-	-	TSL:3
Epha7-207	ENSMUST00000136827.1	648	No protein	lncRNA	-	-	TSL:3

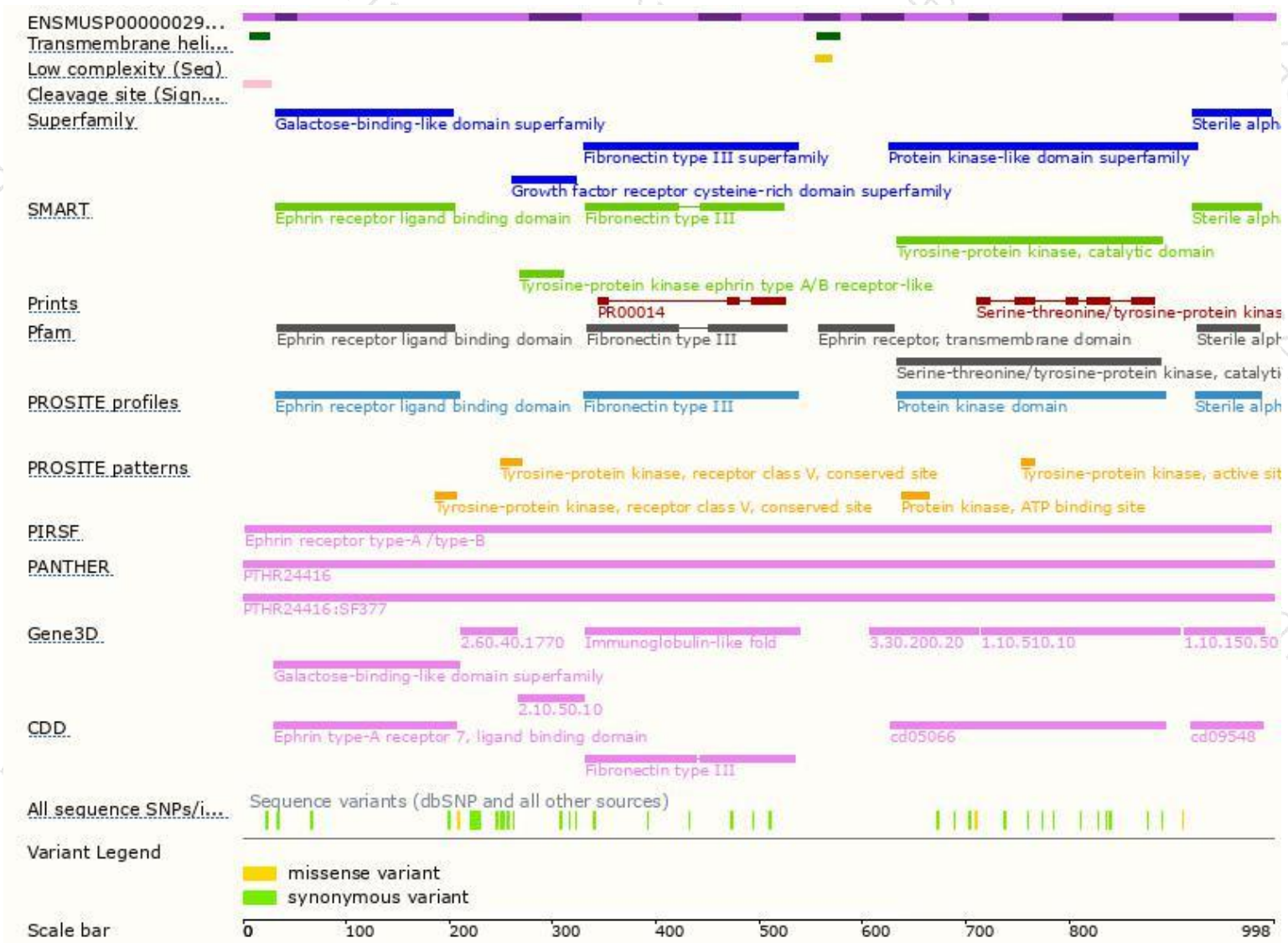
The strategy is based on the design of *Epha7-201* transcript,The transcription is shown below



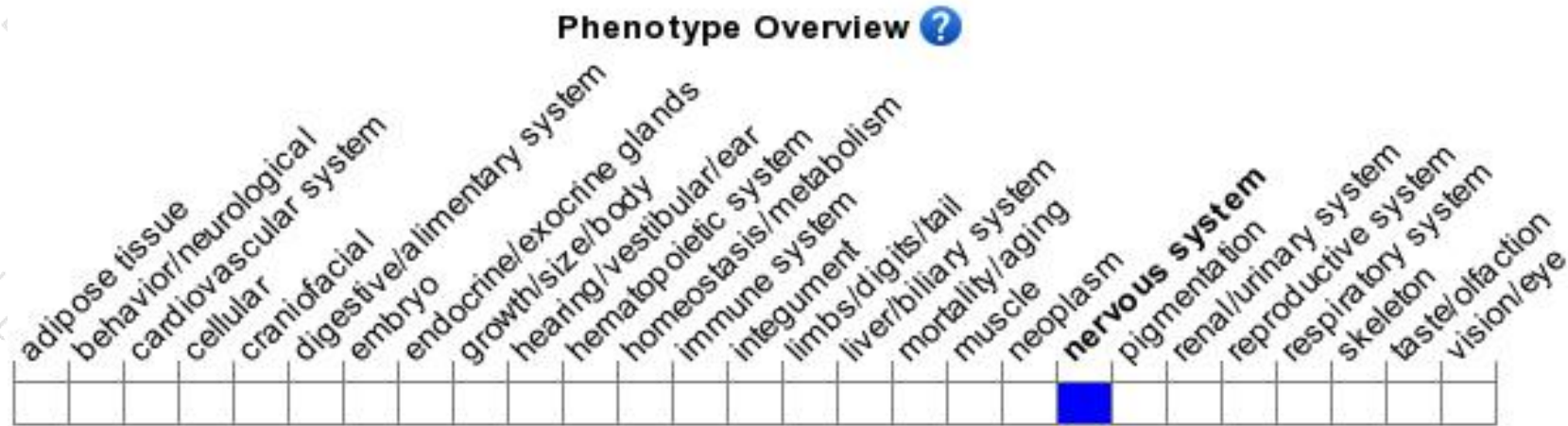
Genomic location distribution



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, Some homozygous mutants display anencephaly. Mutants also exhibit increased proliferation of neural progenitor cells in the lateral ventricle wall of the adult brain.

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

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