Efnb1 Cas9-CKO Strategy

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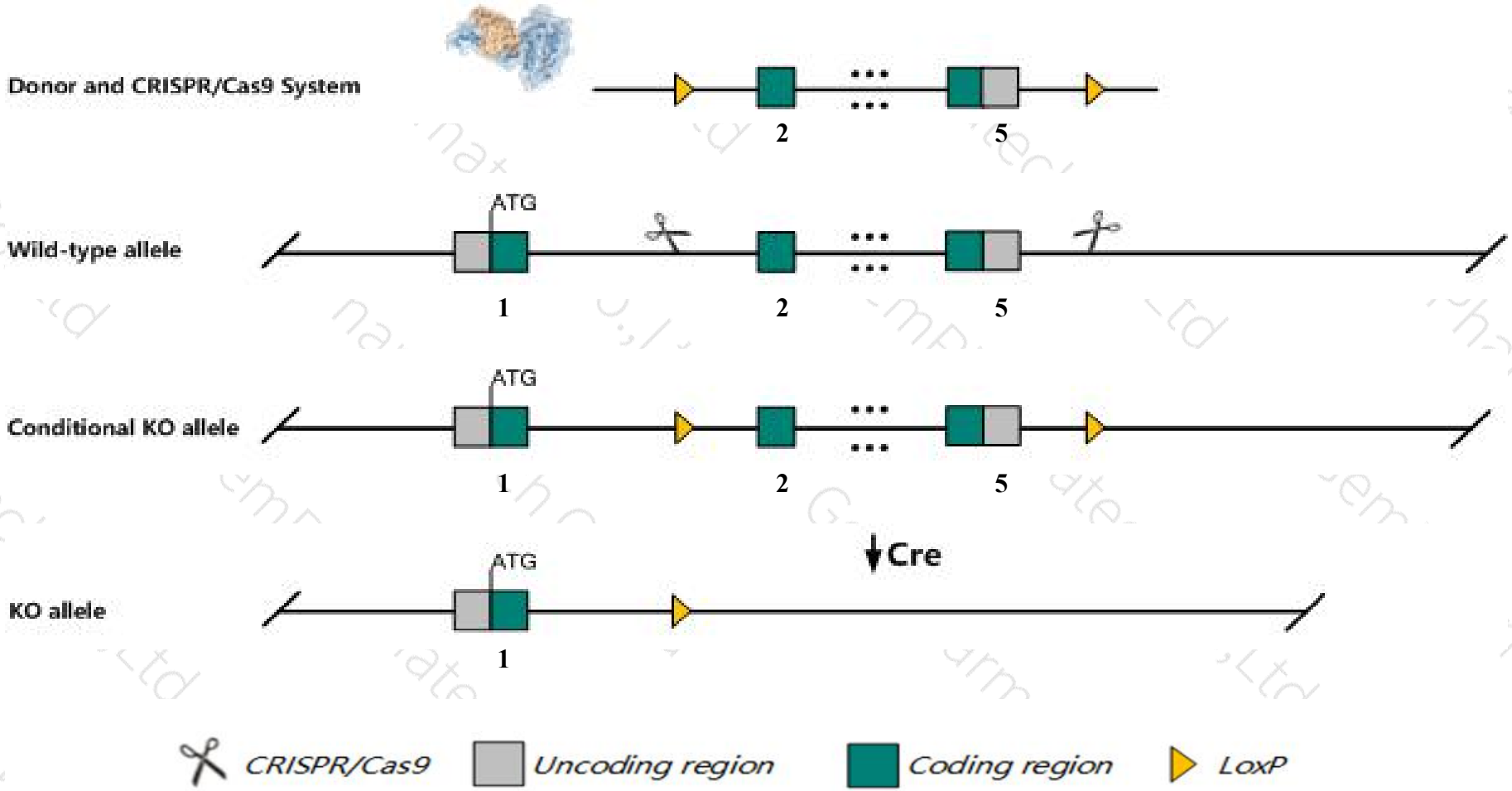
Project Overview

Project Name	***Efnb1***
Project type	**Cas9-CKO**
Strain background	**C57BL/6JGpt**

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Efnb1* gene. The schematic diagram is as follows:



Technical routes

- The *Efnb1* gene has 2 transcripts. According to the structure of *Efnb1* gene, exon2-exon5 of *Efnb1-201* (ENSMUST00000052839.6) transcript is recommended as the knockout region.The region contains most of the coding sequence.Knock out the region will result in disruption of protein function.

- In this project we use CRISPR/Cas9 technology to modify *Efnb1* 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.

Notice

- According to the existing MGI data,engineered alleles of this gene produce cranialfacial defects resulting in neonatal lethality.
- The *Efnb1* gene is located on the ChrX. 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）

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Efnb1 ephrin B1 [Mus musculus (house mouse)]

Gene ID: 13641, updated on 13-Mar-2020

Summary

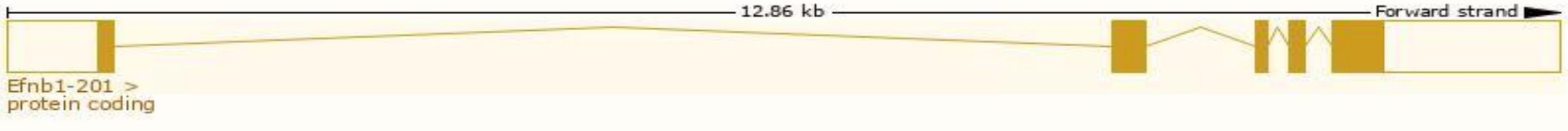
Official Symbol	Efnb1 provided by MGI
Official Full Name	ephrin B1 provided byMGI
Primary source	MGI:MGI:102708
See related	Ensembl:ENSMUSG00000031217
Gene type	protein coding
RefSeq status	REVIEWED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	Cek5-L, EFL-3, Elk-L, Epl2, Eplg2, LERK-2, Lerk2, Stra1
Summary	This gene encodes a membrane protein that acts as a ligand for Eph family receptors. Signalling occurs bidirectionally in both the cell containing the receptor and the cell expressing this protein. Activity of this protein is important in neuronal axon growth and other developmental processes. [provided by RefSeq, May 2015]
Expression	Ubiquitous expression in lung adult (RPKM 47.3), colon adult (RPKM 44.5) and 26 other tissuesSee more
Orthologs	human all

Transcript information（Ensembl）

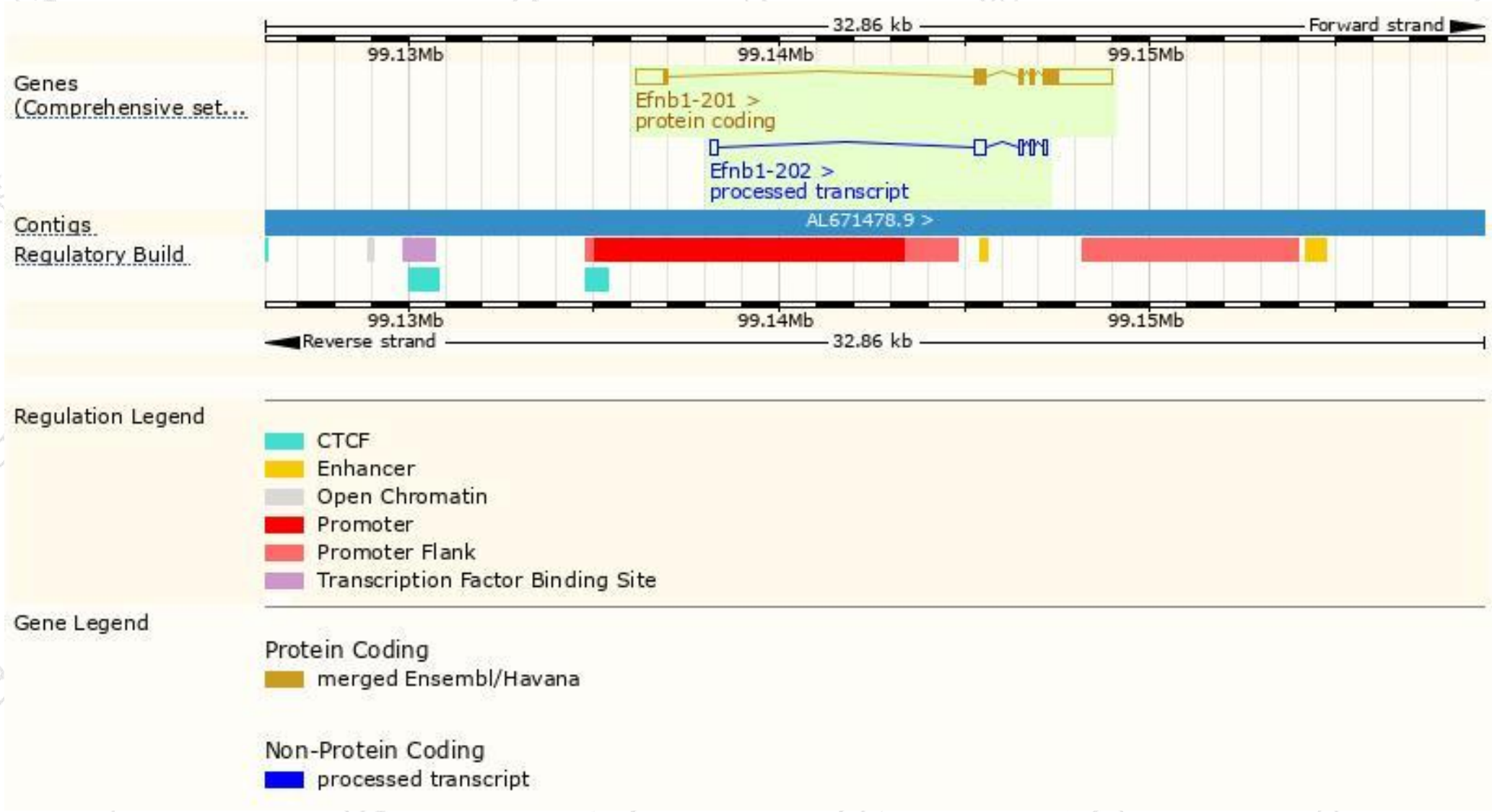
The gene has 2 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Efnb1-201	ENSMUST00000052839.6	3258	345aa	Protein coding	CCDS30298	P52795 Q544L9	TSL:1 GENCODE basic APPRIS is a system to annotate alternatively spliced transcripts based on a range of computational methods to identify the most functionally important transcript(s) of a gene. APPRIS P1
Efnb1-202	ENSMUST00000151750.1	807	No protein	Processed transcript	-	-	TSL:3

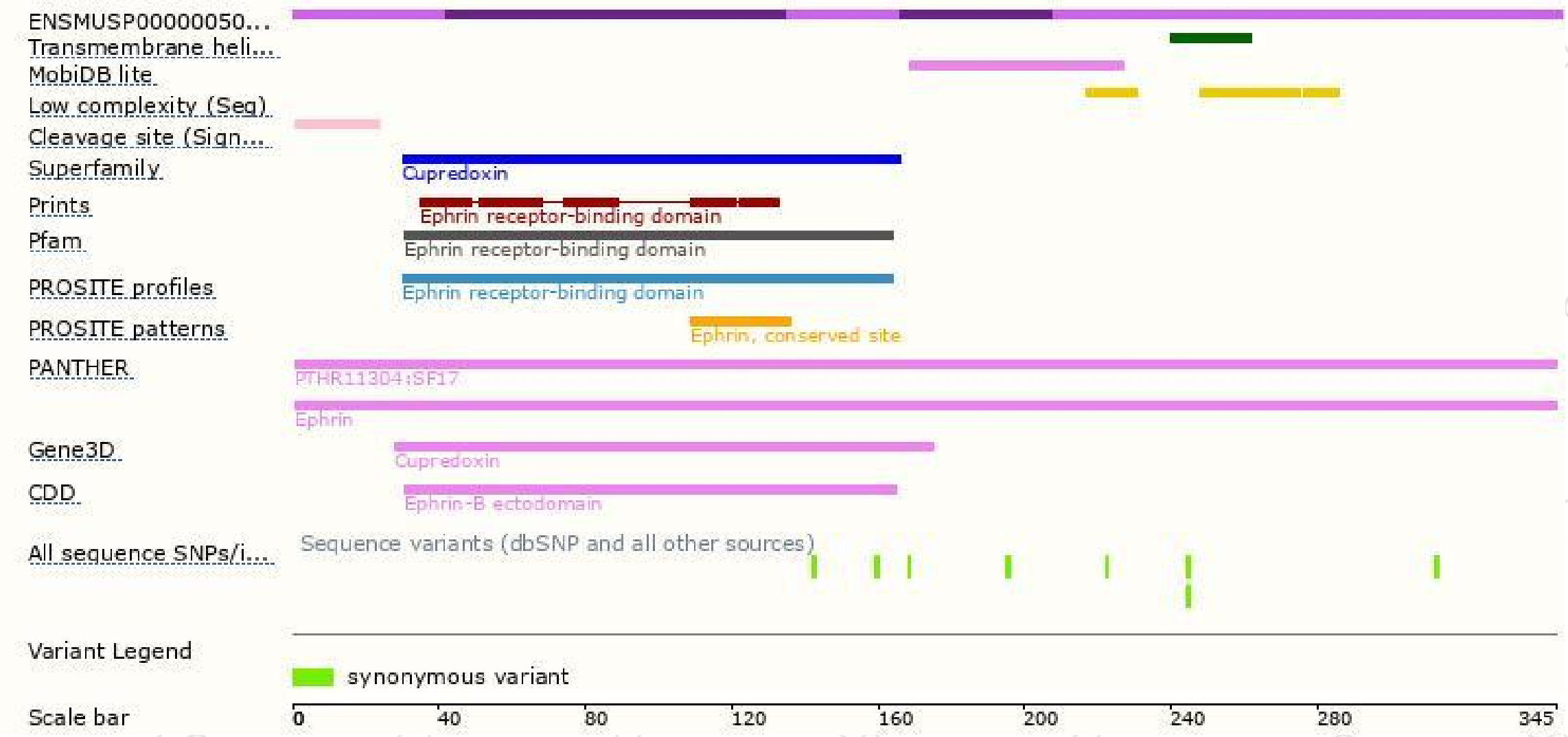
The strategy is based on the design of *Efnb1-201* transcript,the transcription is shown below:



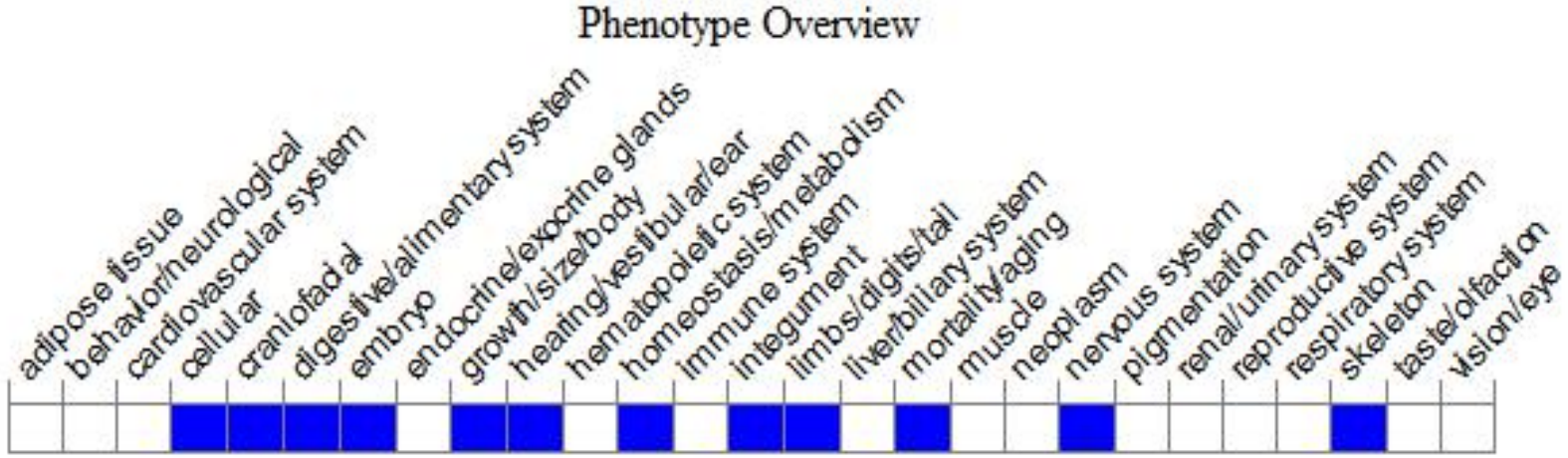
Genomic location distribution



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/).

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

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