Emx1 Cas9-KO Strategy

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Project Overview

Project Name	*Emx1*
Project type	**Cas9-KO**
Strain background	**C57BL/6JGpt**

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Emx1* gene. The schematic diagram is as follows:

Technical routes

➢ The *Emx1* gene has 2 transcripts. According to the structure of *Emx1* gene, exon2 of *Emx1-201* (ENSMUST00000045942.8) transcript is recommended as the knockout region.The region contains 185bp coding sequence. Knock out the region will result in disruption of protein function.

➢ In this project we use CRISPR/Cas9 technology to modify *Emx1* gene. The brief process is as follows: CRISPR/Cas9 system

Notice

➢ According to the existing MGI data,Mice with this mutation are viable and fertile.

➢ The *Emx1* gene is located on the Chr6. 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）

Emx1 empty spiracles homeobox 1 [Mus musculus (house mouse)]

Gene ID: 13796, updated on 9-Apr-2019

Summary

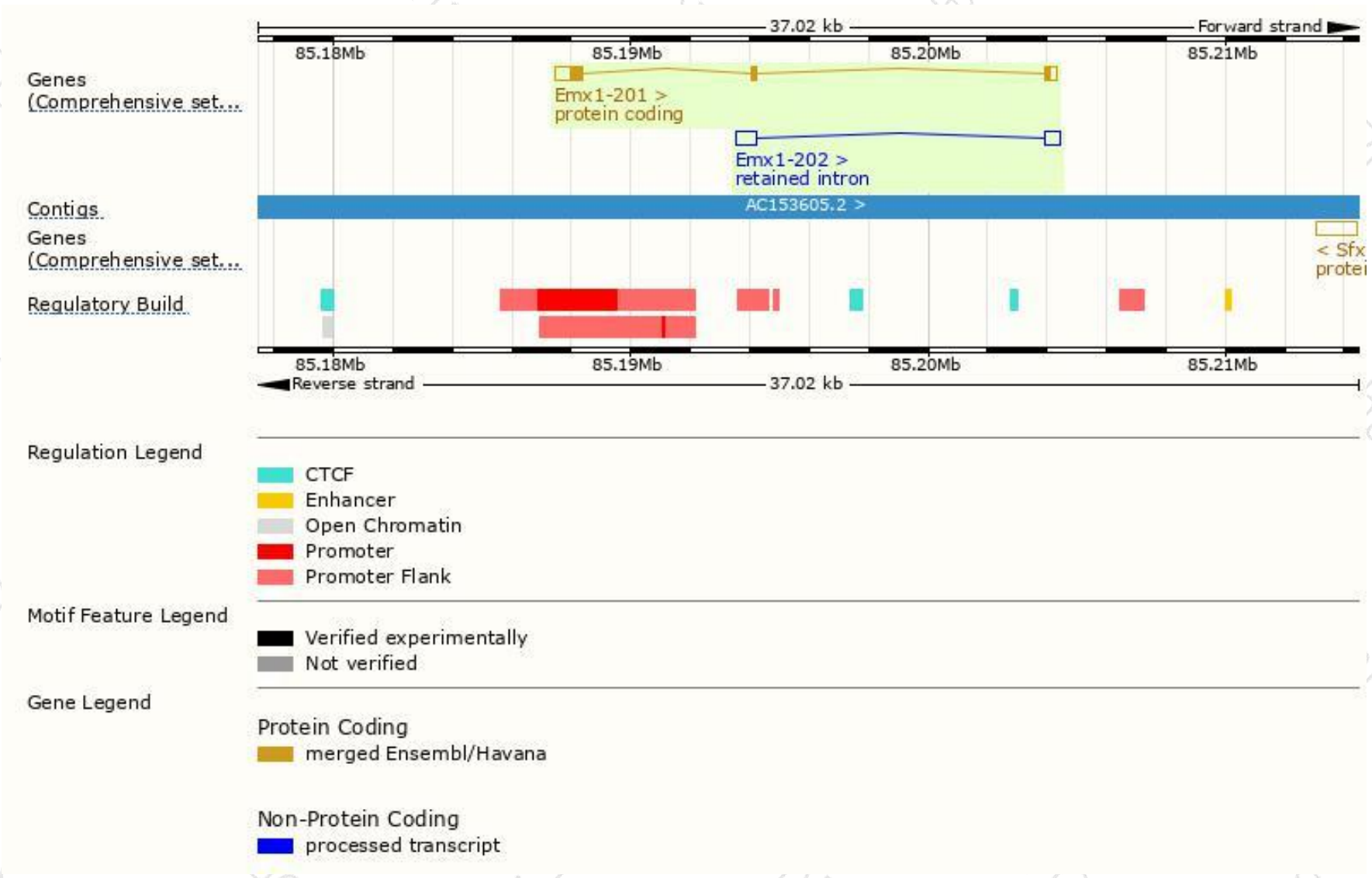|	
Official Symbol	Emx1 provided by MGI
Official Full Name	empty spiracles homeobox 1 provided byMGI
Primary source	MGI:MGI:95387
See related	Ensembl:ENSMUSG00000033726
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Expression	Biased expression in kidney adult (RPKM 30.5), CNS E14 (RPKM 18.1) and 5 other tissuesSee more

Transcript information（Ensembl）

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

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Emx1-201	ENSMUST00000045942.8	1561	257aa	Protein coding	CCDS20290	Q04742	TSL:1 GENCODE basic APPRIS P1
Emx1-202	ENSMUST00000173919.1	1258	No protein	Retained intron	-	-	TSL:1

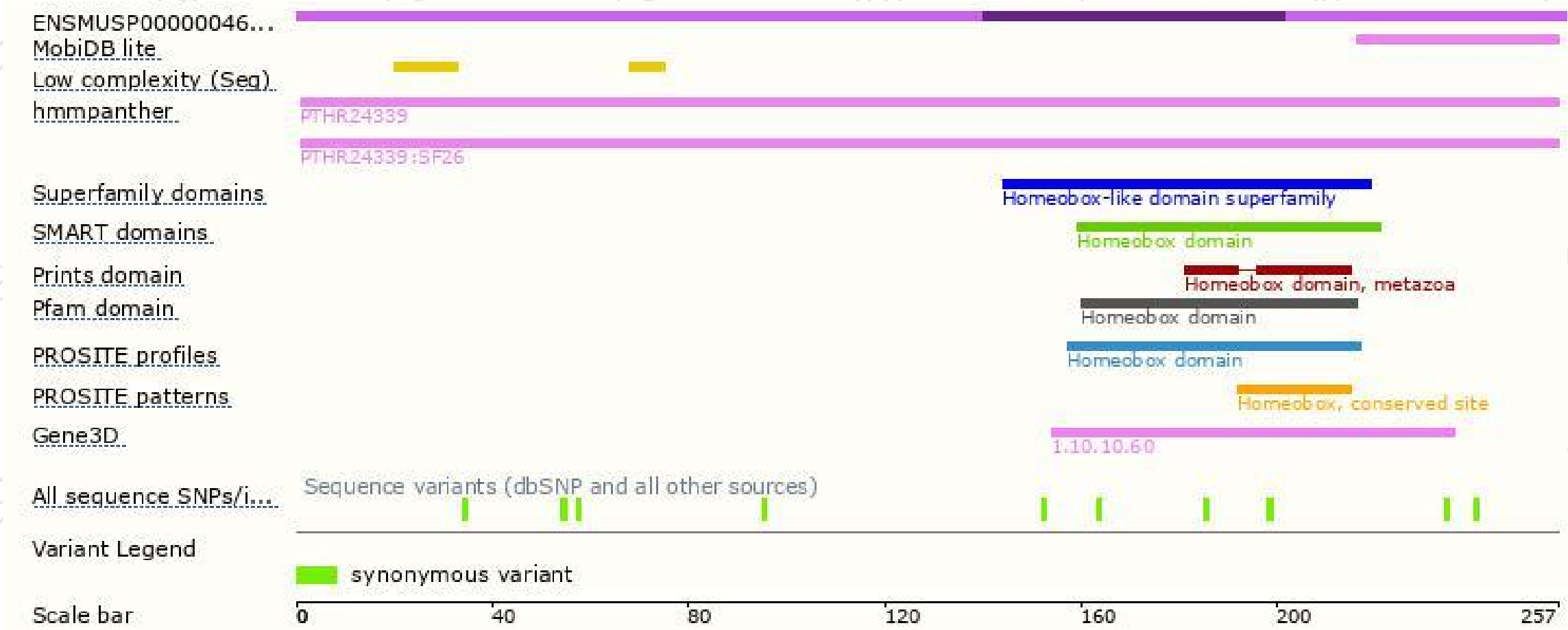The strategy is based on the design of *Emx1-201* transcript,The transcription is shown below

16.92 kb

Forward strand

Emx1-201 >
protein coding
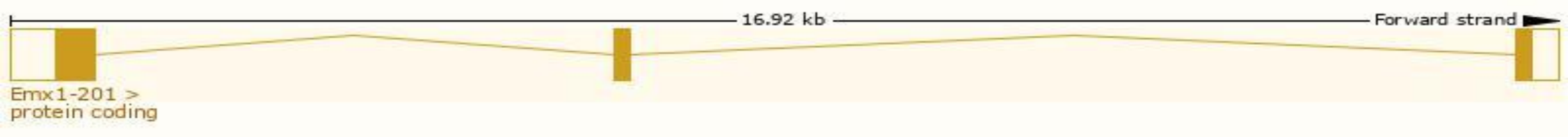
Genomic location distribution

Protein domain

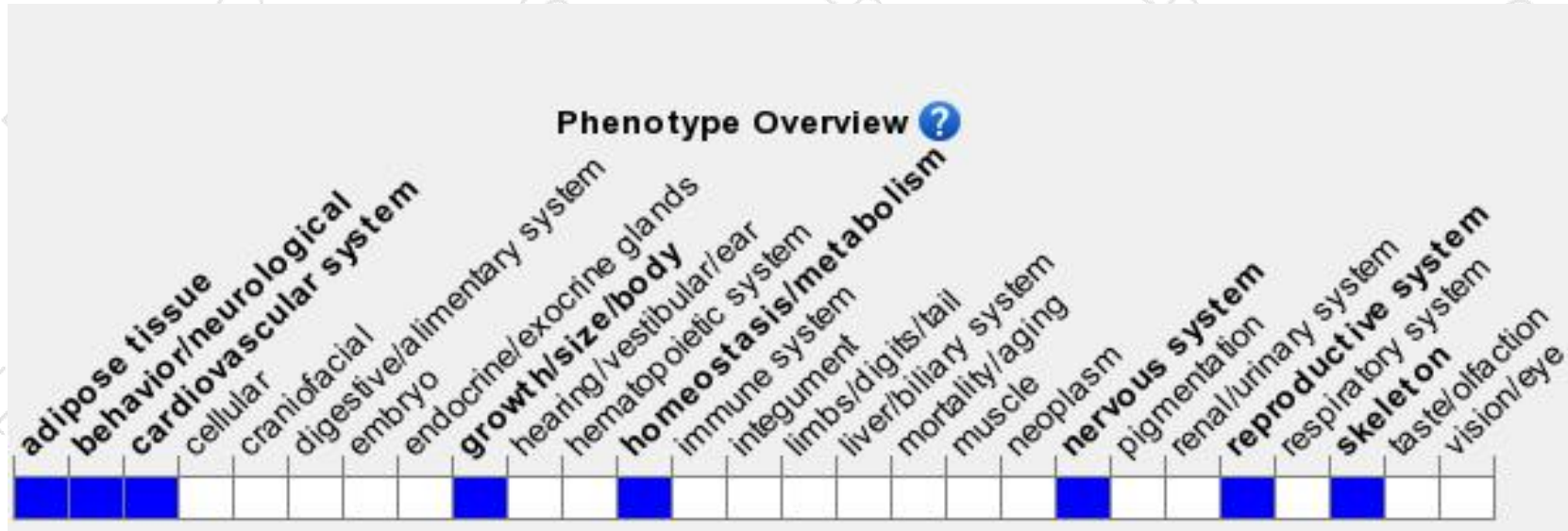|		Scale bar				
0	40	80	120	160	200	257

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 with this mutation are viable and fertile.

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