Fezf2 Cas9-KO Strategy

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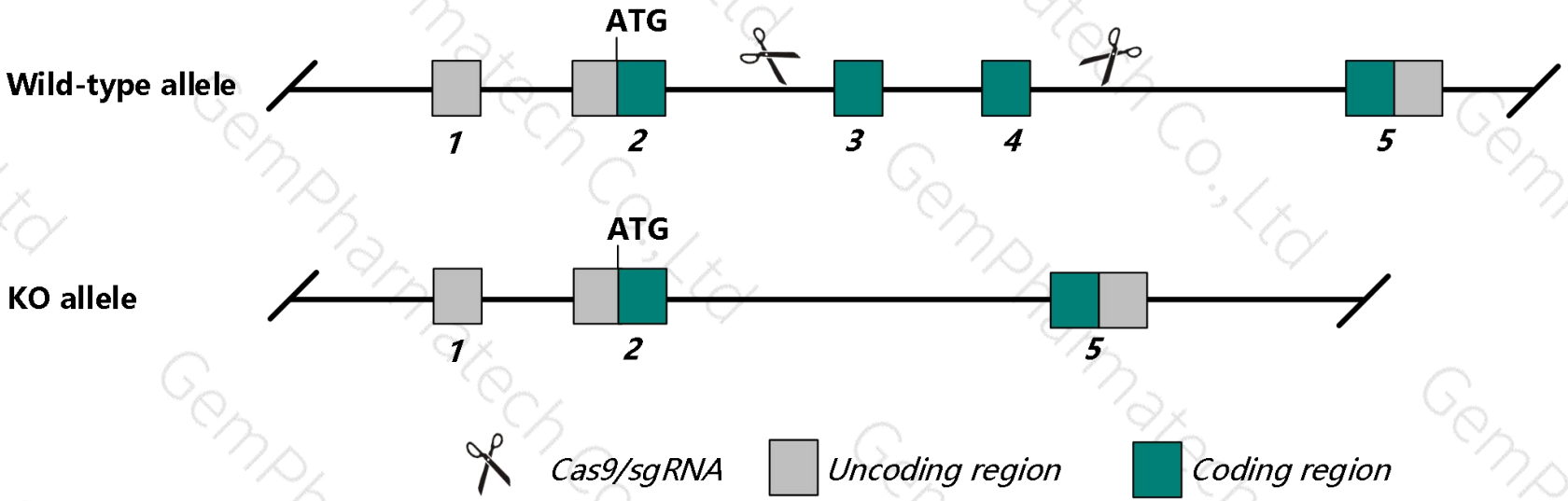
Project Overview

Project Name	***Fezf2***
Project type	**Cas9-KO**
Strain background	**C57BL/6J**

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Fezf2* gene. The schematic diagram is as follows:



Technical routes

- The *Fezf2* gene has 3 transcripts. According to the structure of *Fezf2* gene, exon3-exon4 of *Fezf2-201* (ENSMUST00000022262.5) transcript is recommended as the knockout region.The region contains 268bp coding sequence. Knock out the region will result in disruption of protein function.

- In this project we use CRISPR/Cas9 technology to modify *Fezf2* gene. The brief process is as follows: sgRNA was transcribed in vitro.Cas9 and sgRNA were microinjected into the fertilized eggs of C57BL/6J 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/6J mice.

Notice

- According to the existing MGI data, homozygotes for a null allele show hyperactivity, altered feeding behavior leading to delayed growth and premature death, and impaired formation of subplate neurons and thalamocortical projections. Homozygotes for another allele lack a corpus callosum and show severe subcortical projection defects.

- The *Fezf2* gene is located on the Chr14. 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）

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Fezf2 Fez family zinc finger 2 [Mus musculus (house mouse)]

Gene ID: 54713, updated on 12-Mar-2019

Summary

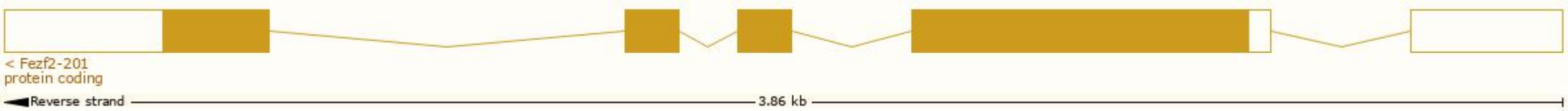
Official Symbol	Fezf2 provided by MGI
Official Full Name	Fez family zinc finger 2 provided byMGI
Primary source	MGI:MGI:1859823
See related	Ensembl:ENSMUSG00000021743
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	AI451466, AI852056, Fez, Fezl, Zfp312
Expression	Biased expression in CNS E14 (RPKM 17.8), whole brain E14.5 (RPKM 14.5) and 5 other tissuesSee more
Orthologs	human all

Transcript information（Ensembl）

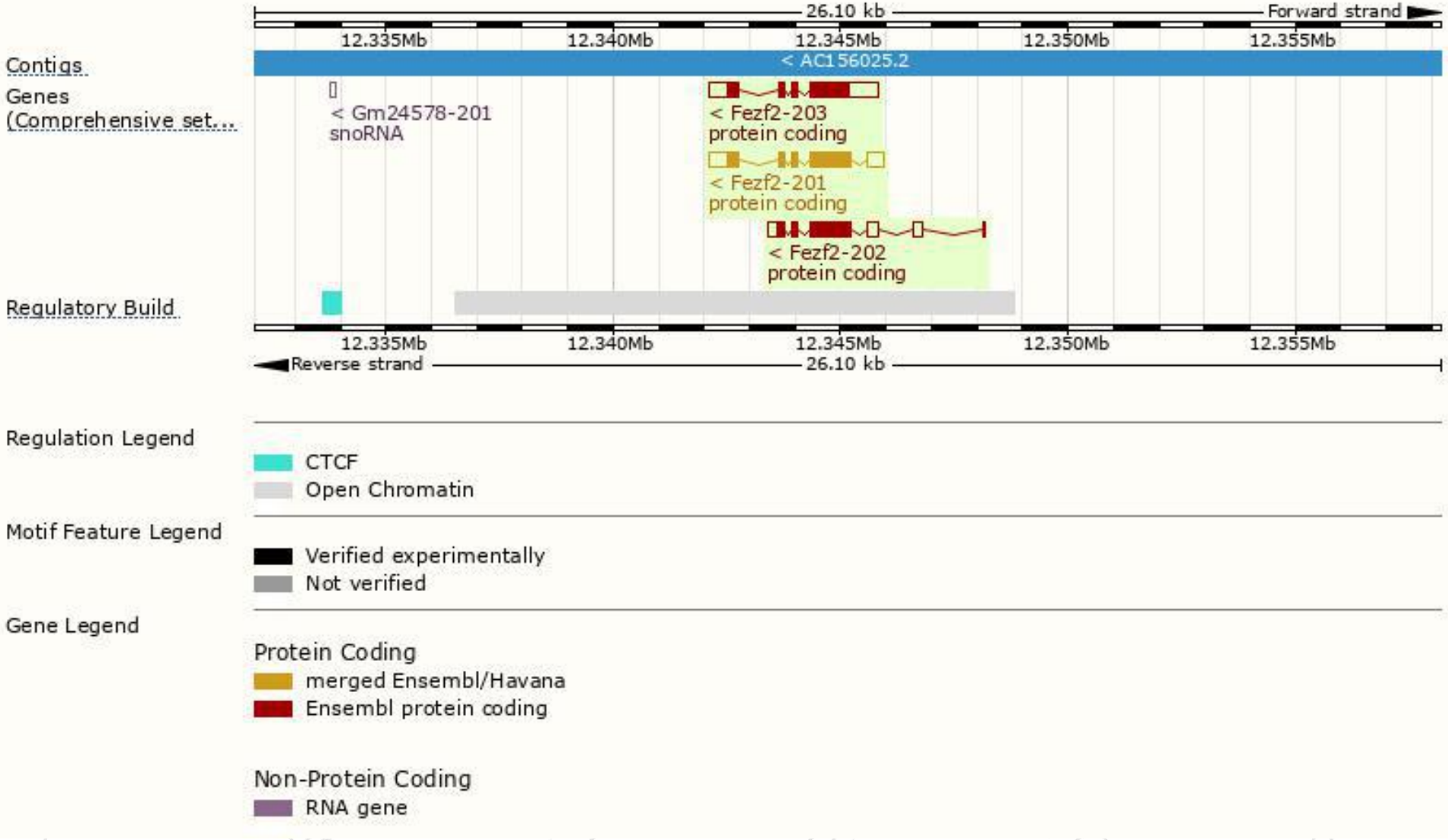
The gene has 3 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Fezf2-203	ENSMUST00000224714.1	2429	455aa	Protein coding	CCDS26818	Q9ESP5	GENCODE basic APPRIS P1
Fezf2-201	ENSMUST00000022262.5	2188	455aa	Protein coding	CCDS26818	Q9ESP5	TSL:1 GENCODE basic APPRIS P1
Fezf2-202	ENSMUST00000224023.1	1917	373aa	Protein coding	-	A0A286YDZ2	GENCODE basic

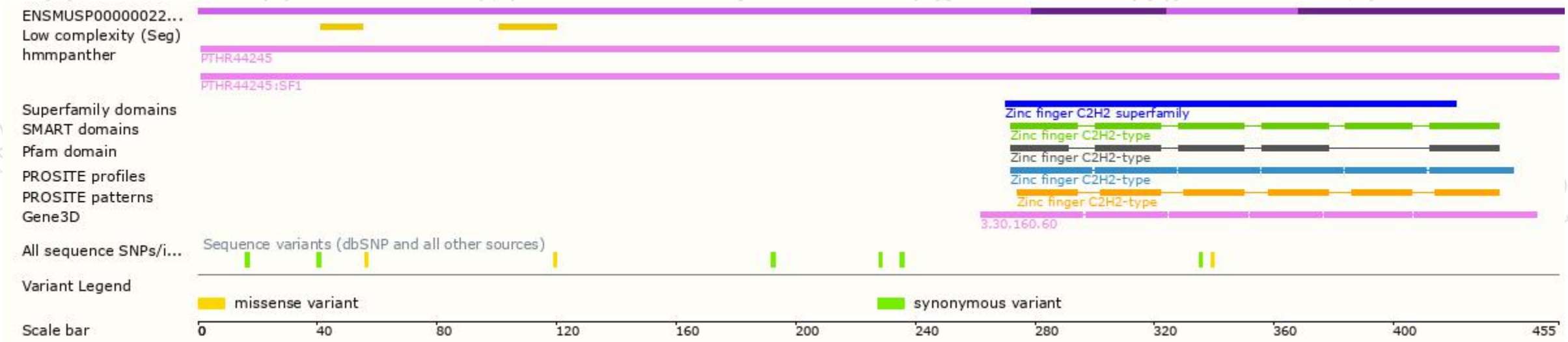
The strategy is based on the design of *Fezf2-201* transcript,The transcription is shown below：



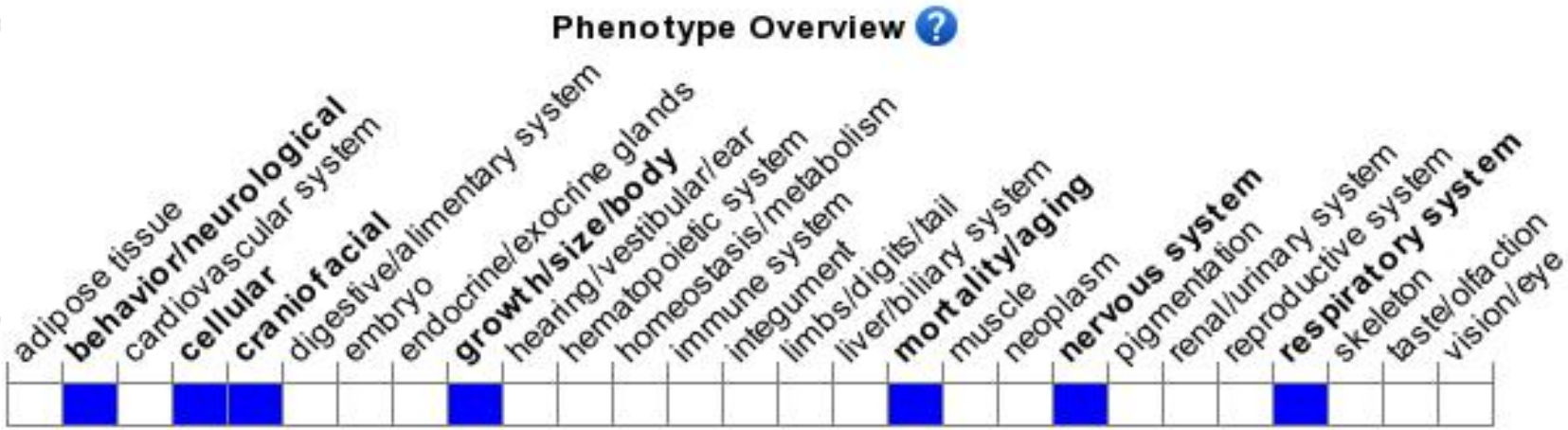
Genomic location distribution



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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