Zfp407 Cas9-KO Strategy

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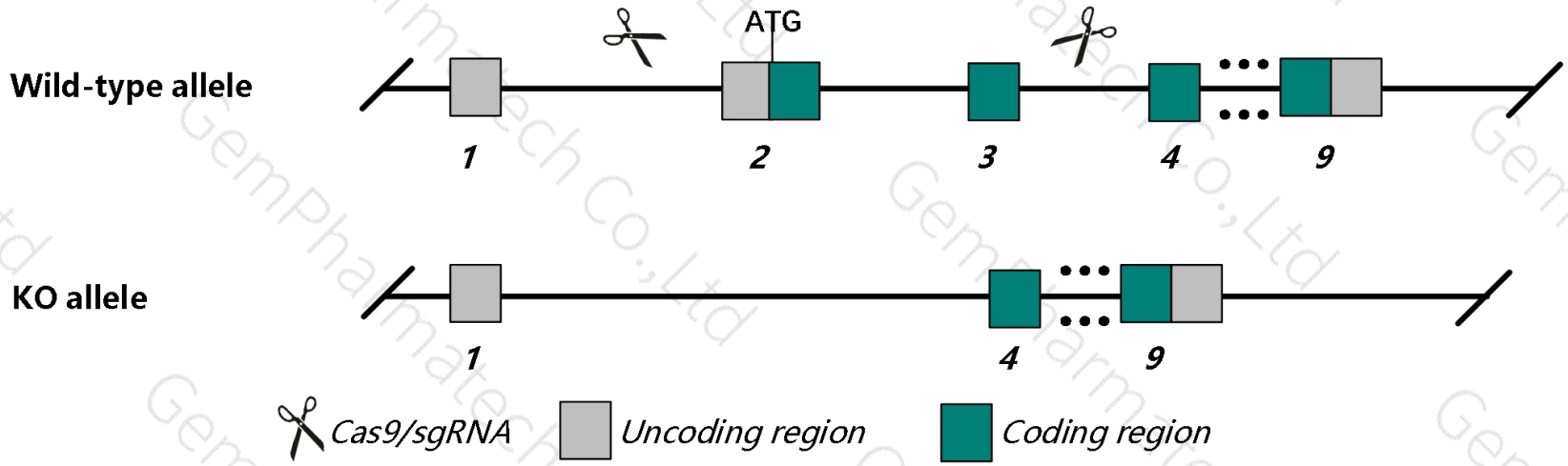
Design Date: 2020-7-21

Project Overview

Project Name	***Zfp407***
Project type	**Cas9-KO**
Strain background	**C57BL/6JGpt**

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Zfp407* gene. The schematic diagram is as follows:



Technical routes

➢ The *Zfp407* gene has 6 transcripts. According to the structure of *Zfp407* gene, exon2-exon3 of *Zfp407-202*(ENSMUST00000125763.2) transcript is recommended as the knockout region.The region contains start codon ATG.Knock out the region will result in disruption of protein function.

➢ In this project we use CRISPR/Cas9 technology to modify *Zfp407* gene. The brief process is as follows: CRISPR/Cas9 system 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.

Notice

➢ According to the existing MGI data,mice homozygous for a knock-out allele exhibit failure of blastocyst formation and complete embryonic lethality before implantation.

➢ The transcript of *Zfp407*-203&206 may not be affected.

➢ The effect on transcript *Zfp407*-201 is unknown.

➢ The *Zfp407* gene is located on the Chr18. 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）

Zfp407 zinc finger protein 407 [Mus musculus (house mouse)]

Gene ID: 240476, updated on 13-Mar-2020

Summary

Official Symbol	Zfp407 provided by MGI
Official Full Name	zinc finger protein 407 provided byMGI
Primary source	MGI:MGI:2685179
See related	Ensembl:ENSMUSG00000048410
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	6430585N13Rik, Gm333, Gm334, Gm948, ZNF407
Expression	Ubiquitous expression in placenta adult (RPKM 1.6), CNS E11.5 (RPKM 1.6) and 28 other tissuesSee more
Orthologs	human all

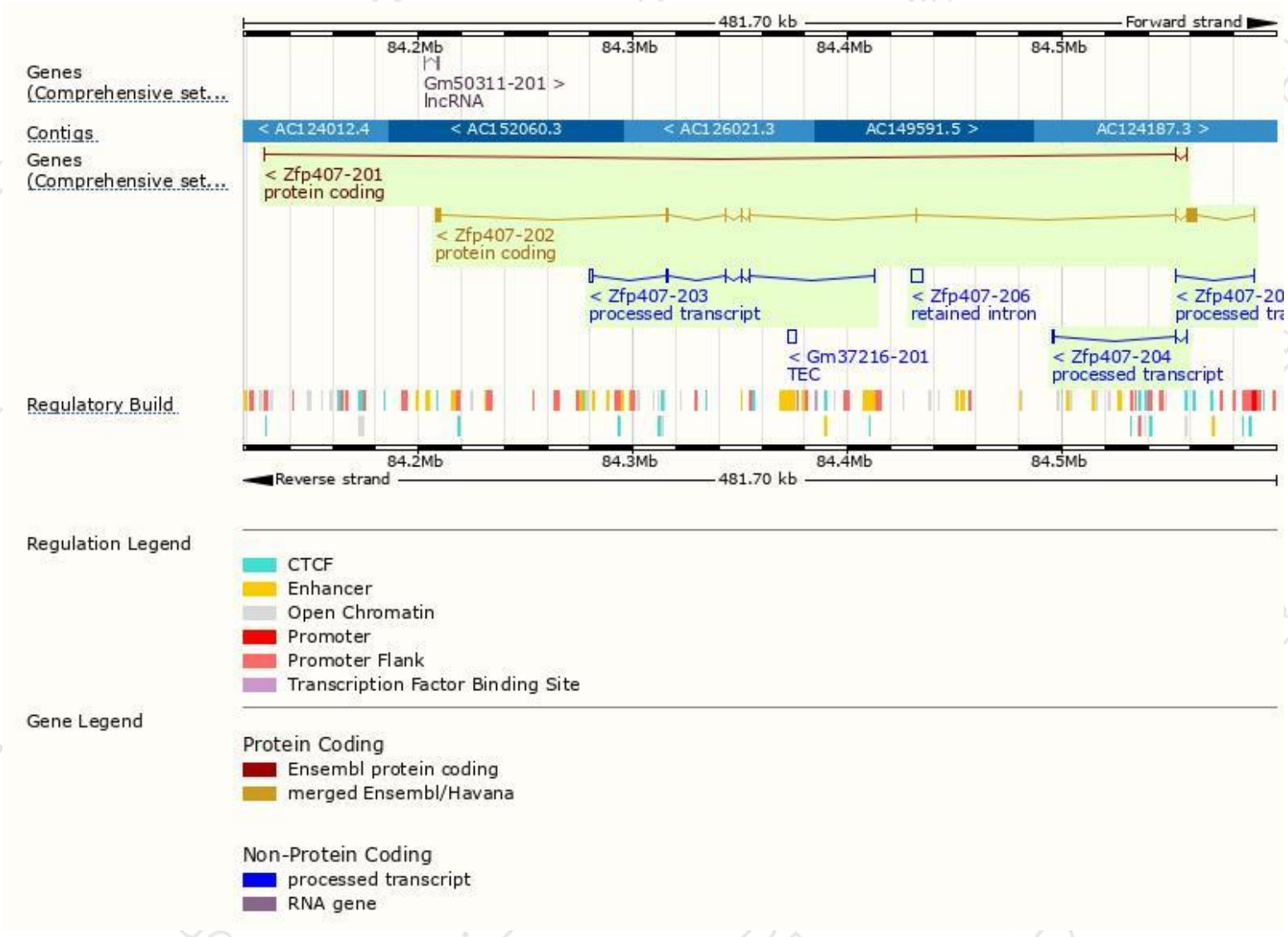
Transcript information（Ensembl）

The gene has 6 transcripts,all transcripts are shown below:

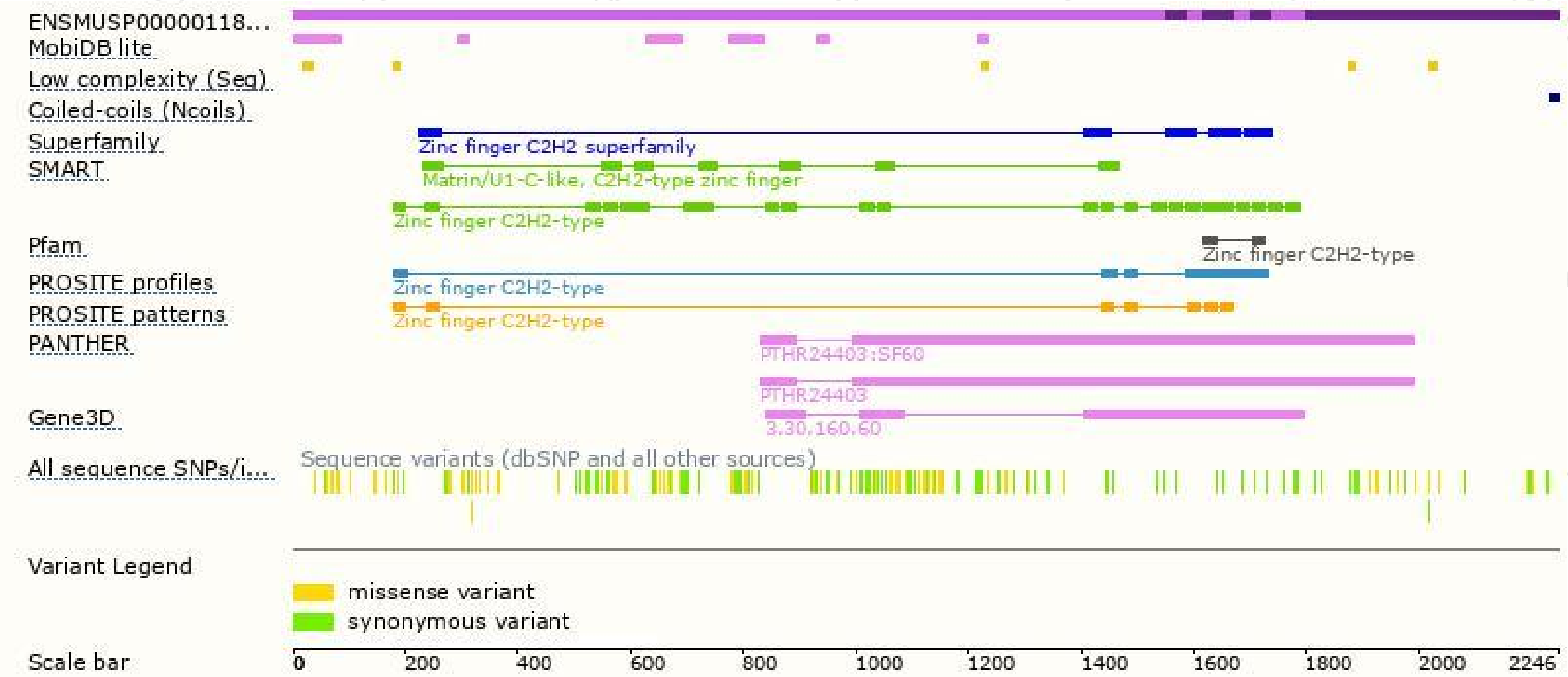
Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Zfp407-202	ENSMUST00000125763.2	7909	2246aa	Protein coding	CCDS50338	G3UVV3	TSL:5 GENCODE basic APPRIS P1
Zfp407-201	ENSMUST00000125450.8	541	72aa	Protein coding	-	S4R2G4	CDS 5' incomplete TSL:3
Zfp407-203	ENSMUST00000143597.1	2126	No protein	Processed transcript	-	-	TSL:1
Zfp407-204	ENSMUST00000156181.1	428	No protein	Processed transcript	-	-	TSL:5
Zfp407-205	ENSMUST00000182297.1	364	No protein	Processed transcript	-	-	TSL:3
Zfp407-206	ENSMUST00000182849.1	4949	No protein	Retained intron	-	-	TSL:NA

The strategy is based on the design of *Zfp407-202* transcript,the transcription is shown below:

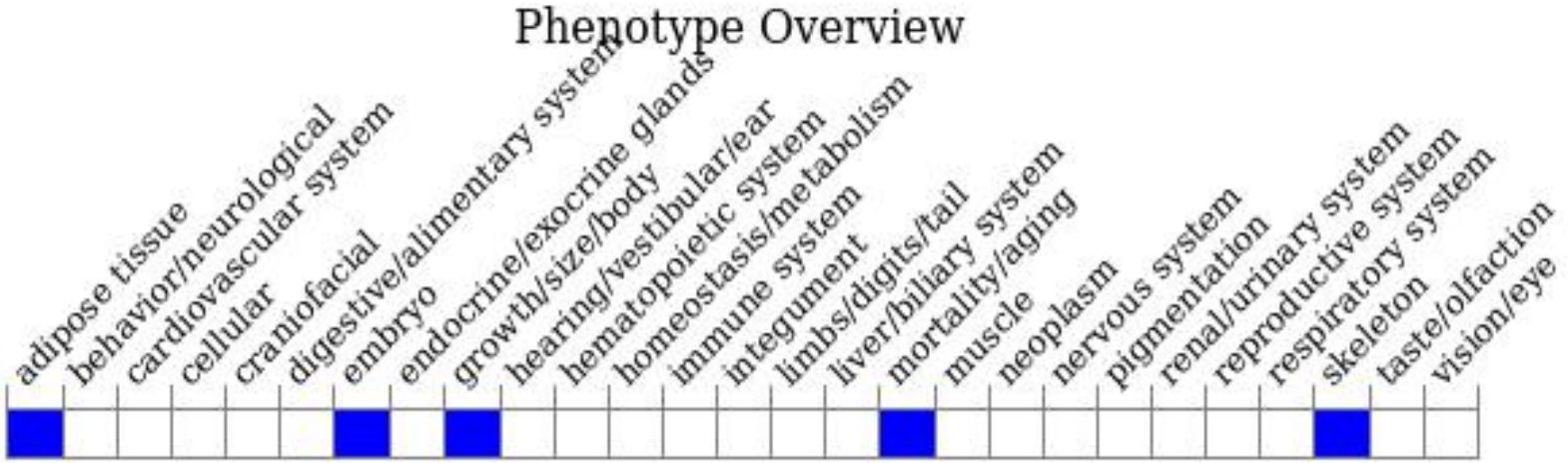
Genomic location distribution



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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