

Tfe3 Cas9-KO Strategy

Designer:

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Project Overview

Project Name

Tfe3

Project type

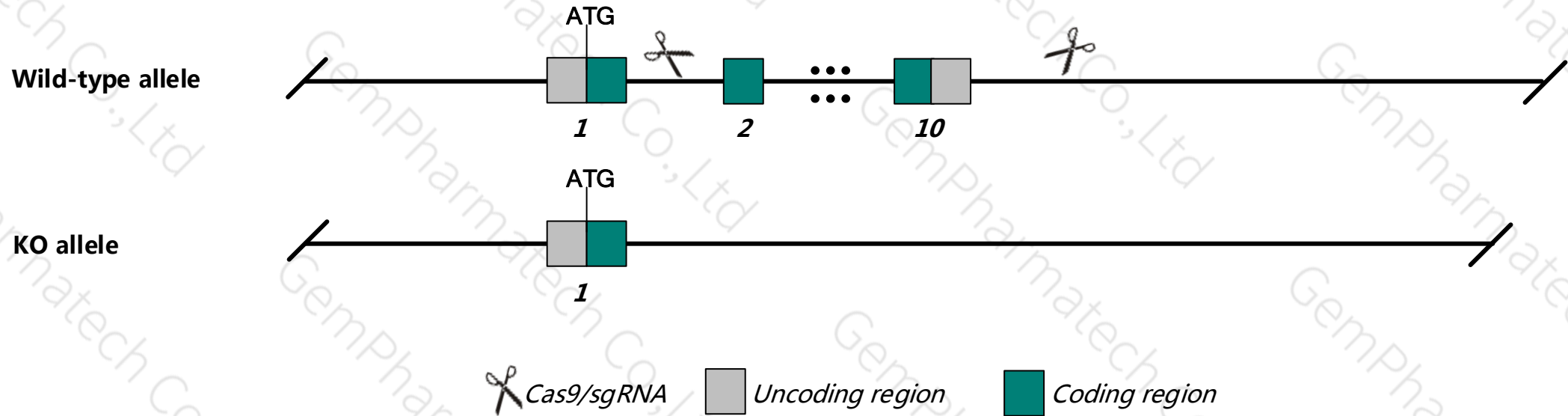
Cas9-KO

Strain background

C57BL/6JGpt

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Tfe3* gene. The schematic diagram is as follows:



Technical routes

- The *Tfe3* gene has 14 transcripts. According to the structure of *Tfe3* gene, exon2-exon10 of *Tfe3*-201 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 *Tfe3* gene. The brief process is as follows: sgRNA was transcribed in vitro. Cas9 and sgRNA 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.

- According to the existing MGI data, Mice homozygous for a knock-out allele are viable and fertile, normally pigmented, have normal eyes and mast cells, and show no evidence of osteopetrosis.
- The *Tfe3* 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 gene transcription and translation processes, all risks cannot be predicted under existing information.

Gene information (NCBI)

Tfe3 transcription factor E3 [*Mus musculus* (house mouse)]

Gene ID: 209446, updated on 2-Apr-2019

Summary

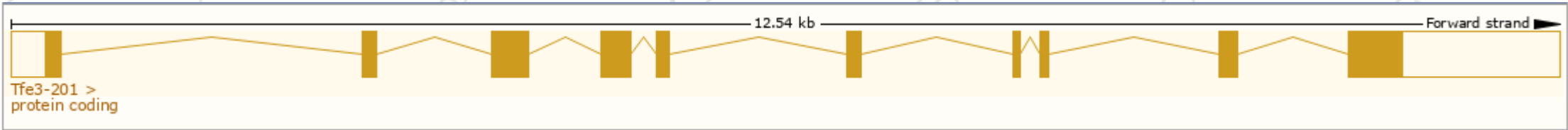
Official Symbol	Tfe3 provided by MGI
Official Full Name	transcription factor E3 provided by MGI
Primary source	MGI:MGI:98511
See related	Ensembl:ENSMUSG000000000134
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	Tcfe3; Tfe-3; bHLHe33; F830016E06Rik
Expression	Ubiquitous expression in adrenal adult (RPKM 12.2), genital fat pad adult (RPKM 11.2) and 28 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

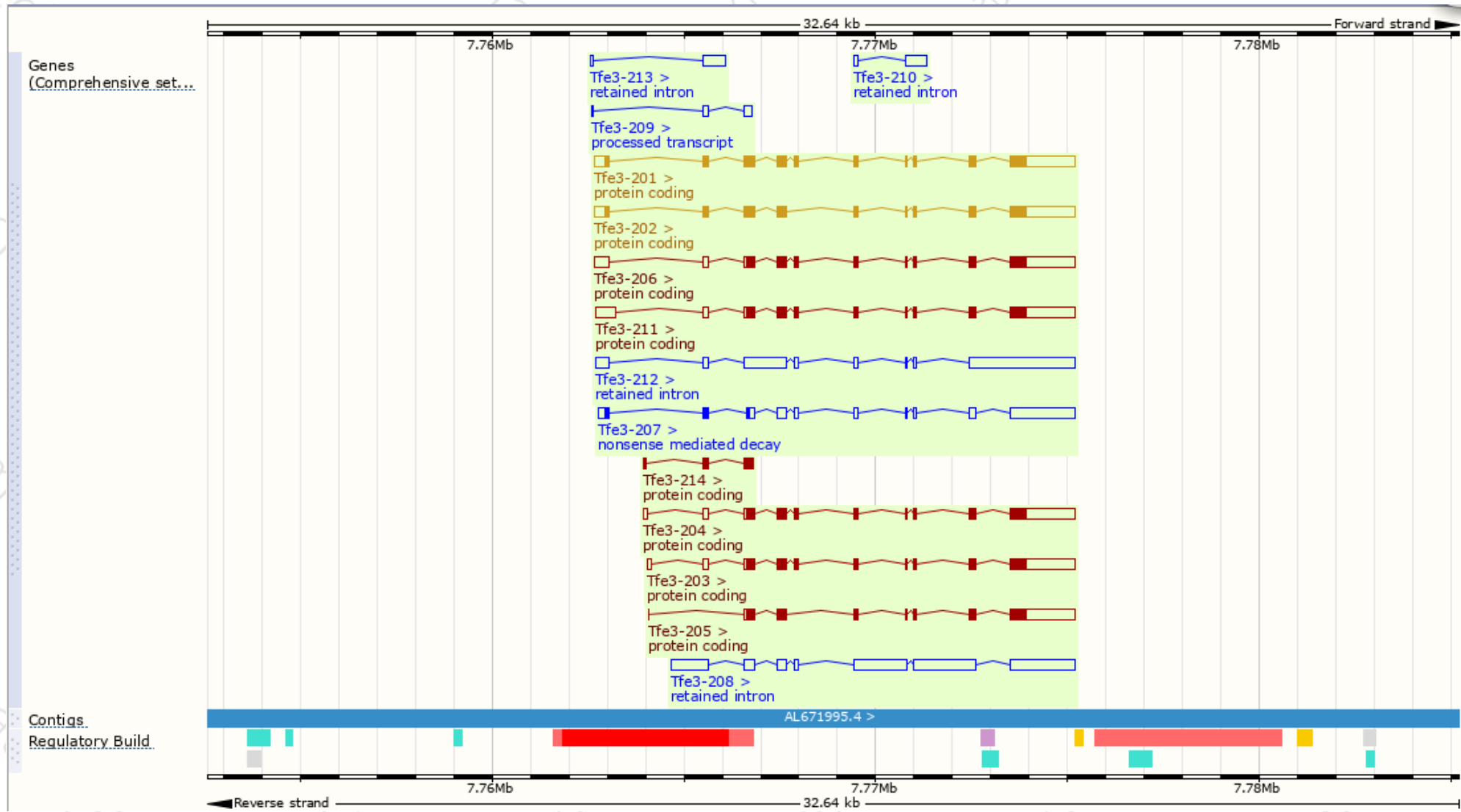
The gene has 14 transcripts, and all transcripts are shown below :

Show/hide columns (1 hidden)							Filter	
Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags	
Tfe3-211	ENSMUST00000137467.7	3390	467aa	Protein coding	CCDS72332	Q64092	TSL:1	GENCODE basic
Tfe3-201	ENSMUST00000077680.9	3277	572aa	Protein coding	CCDS52984	A2AEW1	TSL:1	GENCODE basic APPRIS P1
Tfe3-206	ENSMUST00000115679.7	3239	467aa	Protein coding	CCDS72332	Q64092	TSL:1	GENCODE basic
Tfe3-202	ENSMUST00000079542.12	3163	537aa	Protein coding	CCDS52985	A2AEW0	TSL:1	GENCODE basic
Tfe3-203	ENSMUST00000101695.8	2989	467aa	Protein coding	CCDS72332	Q64092	TSL:5	GENCODE basic
Tfe3-204	ENSMUST00000115677.7	2943	467aa	Protein coding	CCDS72332	Q64092	TSL:1	GENCODE basic
Tfe3-205	ENSMUST00000115678.2	2658	432aa	Protein coding	CCDS72333	Q64092	TSL:5	GENCODE basic
Tfe3-214	ENSMUST00000144900.1	408	136aa	Protein coding	-	A2AEW2	CDS 5' and 3' incomplete	TSL:2
Tfe3-207	ENSMUST00000115680.10	3103	108aa	Nonsense mediated decay	-	Z4YLF7	TSL:5	
Tfe3-209	ENSMUST00000132209.7	372	No protein	Processed transcript	-	-	TSL:3	
Tfe3-208	ENSMUST00000126694.1	6328	No protein	Retained intron	-	-	TSL:2	
Tfe3-212	ENSMUST00000143680.7	4717	No protein	Retained intron	-	-	TSL:2	
Tfe3-210	ENSMUST00000133456.1	663	No protein	Retained intron	-	-	TSL:3	
Tfe3-213	ENSMUST00000144715.1	636	No protein	Retained intron	-	-	TSL:3	

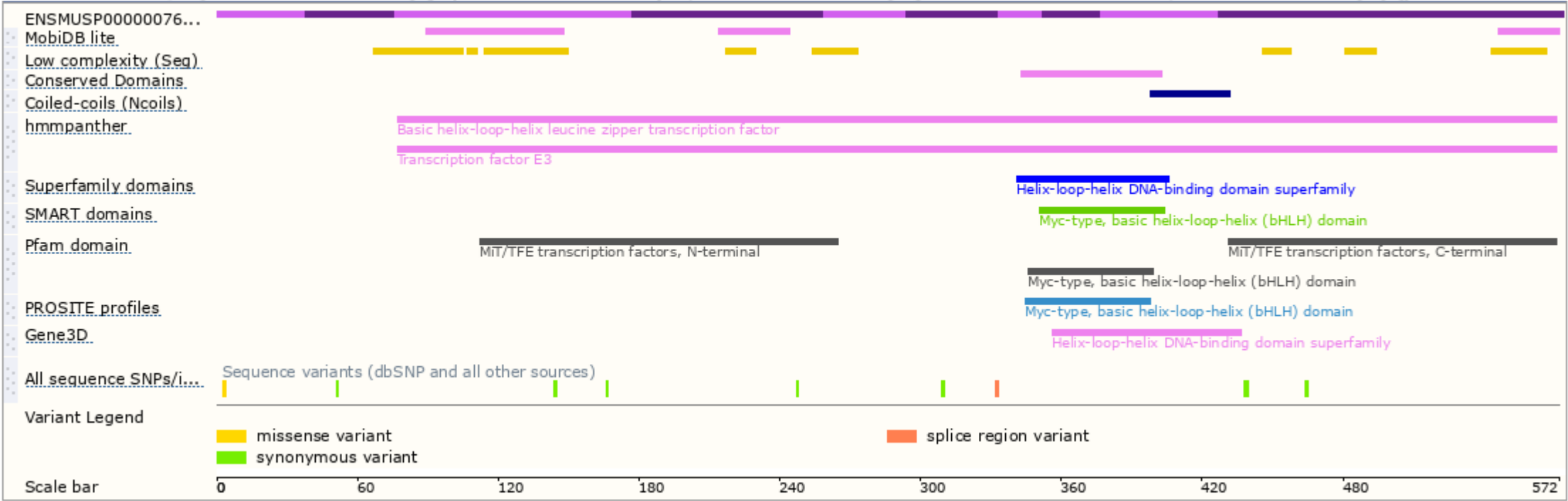
The strategy is based on the design of *Tfe3-201* transcript, The transcription is shown below



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, Mice homozygous for a knock-out allele are viable and fertile, normally pigmented, have normal eyes and mast cells, and show no evidence of osteopetrosis.

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