Zfp384 Cas9-CKO Strategy

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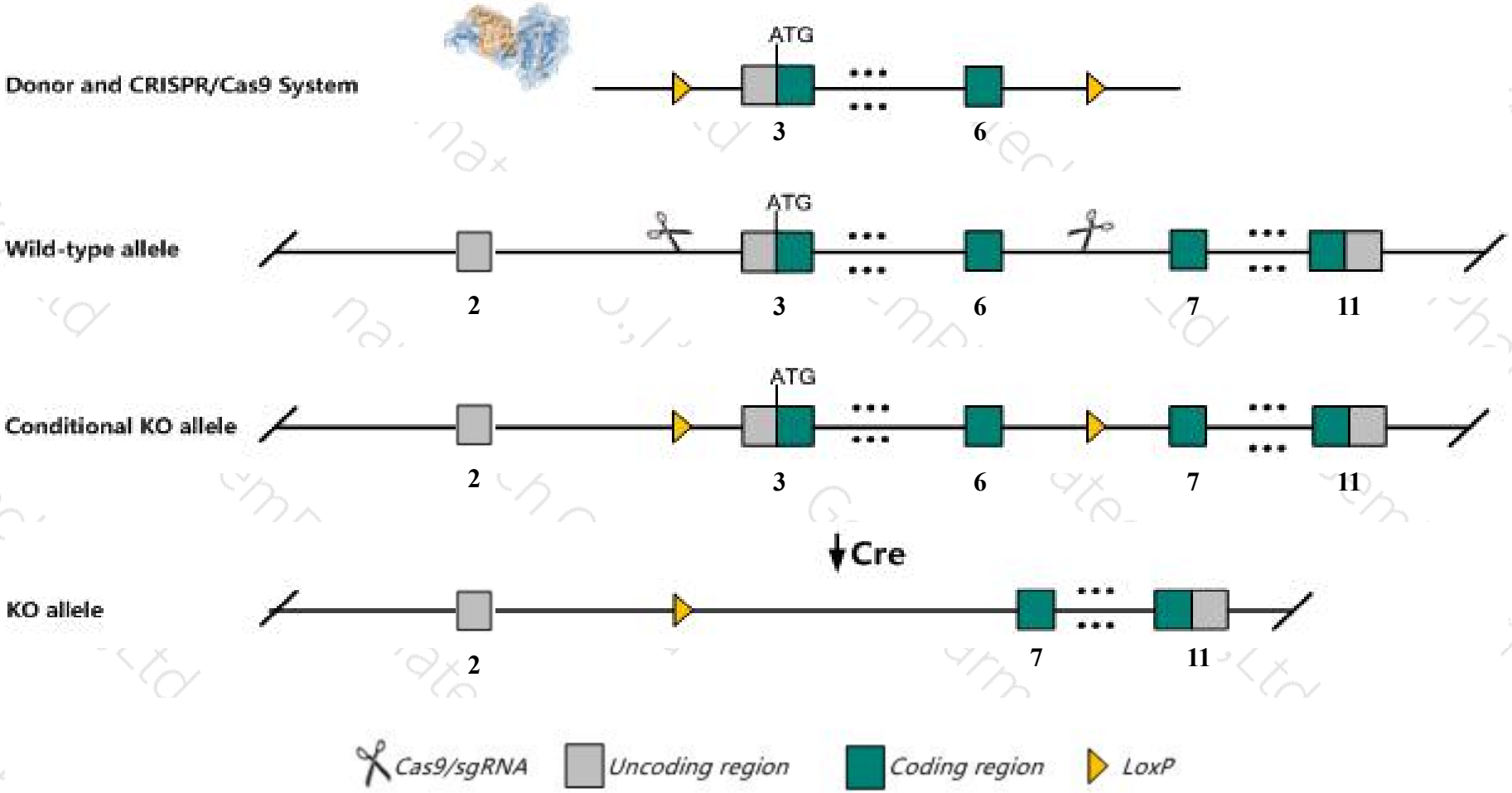
Project Overview

Project Name	***Zfp384***
Project type	**Cas9-CKO**
Strain background	**C57BL/6JGpt**

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Zfp384* gene. The schematic diagram is as follows:



Technical routes

➢ The *Zfp384* gene has 16 transcripts. According to the structure of *Zfp384* gene, exon3-exon6 of *Zfp384-203* (ENSMUST00000084275.11) 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 *Zfp384* 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,homozygous mice are small and males have a small testis. Some males develop infertility and exhibit variable degrees of spermatogenic cell degeneration within the seminiferous tubules and increased apoptosis of spermatogenic cells.

➢ The KO region contains part intron of *4930557K07Rik* gene.

➢ The *Zfp384* 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 loxp insertion on gene transcription, RNA splicing and protein translation cannot be predicted at existing technological level.

Gene information （NCBI）

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Zfp384 zinc finger protein 384 [*Mus musculus* (house mouse)]

Gene ID: 269800, updated on 26-Jun-2020

Summary

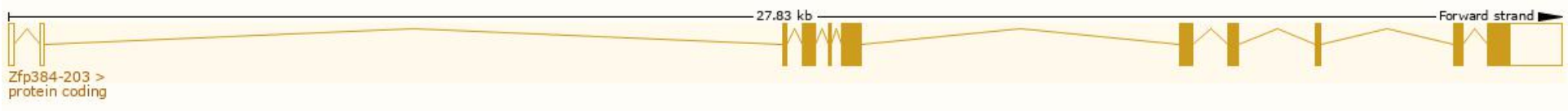
Official Symbol	Zfp384 provided by MGI
Official Full Name	zinc finger protein 384 provided by MGI
Primary source	MGI:MGI:2443203
See related	Ensembl:ENSMUSG00000038346
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	NP; Ciz; Nmp4; BB163993; C130073D16Rik
Expression	Ubiquitous expression in adrenal adult (RPKM 25.8), thymus adult (RPKM 24.3) and 28 other tissues See more
Orthologs	human all

Transcript information（Ensembl）

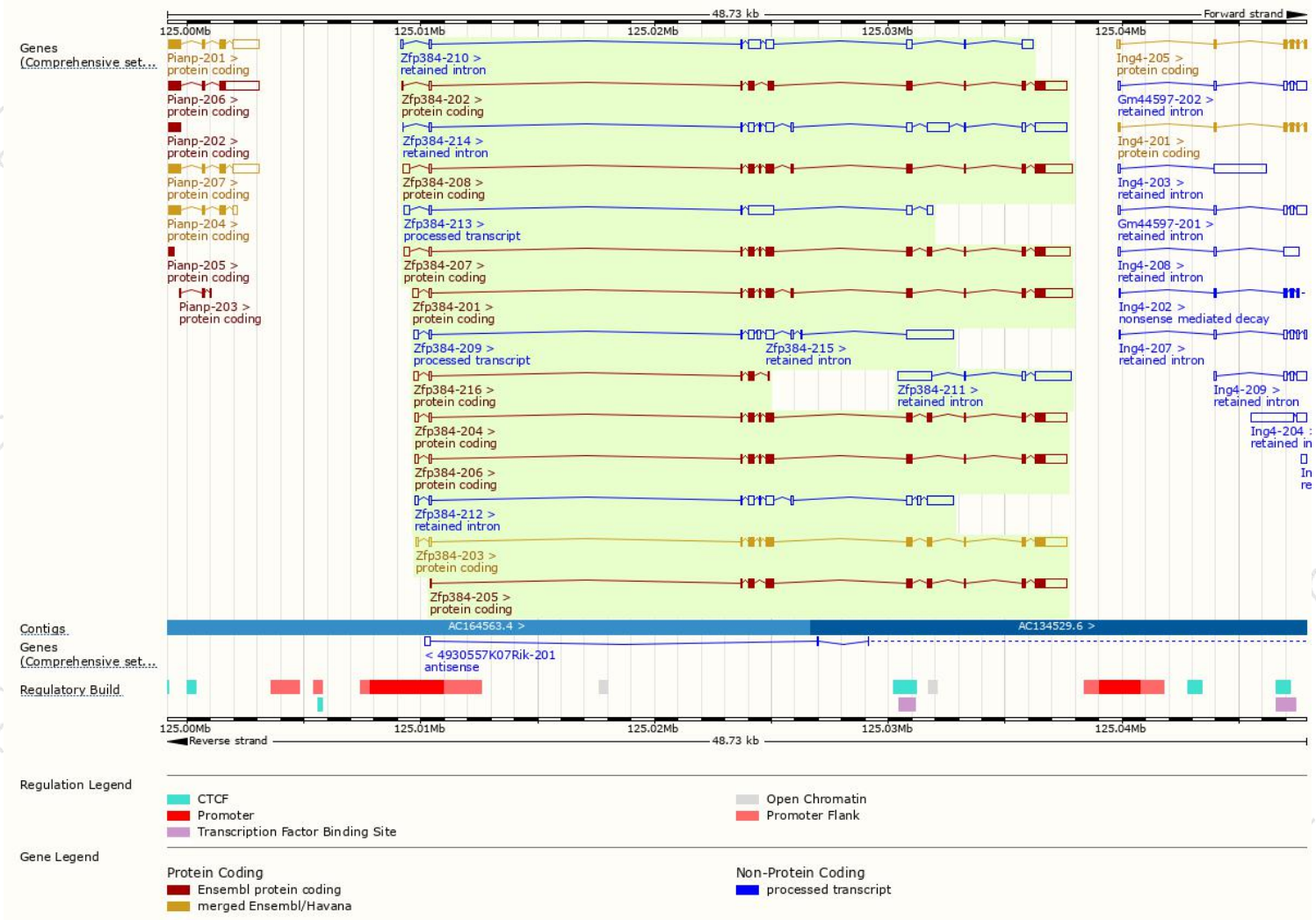
The gene has 16 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein ▲	Biotype	CCDS	UniProt	Flags
Zfp384-216	ENSMUST00000152752.7	628	125aa	Protein coding	-	D3Z517	CDS 3' incomplete TSL:3
Zfp384-202	ENSMUST00000054553.10	2451	468aa	Protein coding	-	D3YX49	TSL:5 GENCODE basic
Zfp384-206	ENSMUST00000112425.7	2691	523aa	Protein coding	-	E9QAR4	TSL:5 GENCODE basic
Zfp384-208	ENSMUST00000112428.7	3132	554aa	Protein coding	CCDS57448	E9QAR1	TSL:1 GENCODE basic
Zfp384-201	ENSMUST00000046064.16	3108	554aa	Protein coding	CCDS57448	E9QAR1	TSL:5 GENCODE basic
Zfp384-205	ENSMUST00000112424.1	2673	568aa	Protein coding	-	E9QAR6	TSL:5 GENCODE basic APPRIS ALT2
Zfp384-207	ENSMUST00000112427.7	3072	584aa	Protein coding	CCDS39631	E9Q1A5	TSL:5 GENCODE basic APPRIS P2
Zfp384-204	ENSMUST00000088308.9	2875	584aa	Protein coding	CCDS39631	E9Q1A5	TSL:5 GENCODE basic APPRIS P2
Zfp384-203	ENSMUST00000084275.11	2829	584aa	Protein coding	CCDS39631	E9Q1A5	TSL:1 GENCODE basic APPRIS P2
Zfp384-213	ENSMUST00000144308.7	1864	No protein	Processed transcript	-	-	TSL:2
Zfp384-209	ENSMUST00000131555.7	719	No protein	Processed transcript	-	-	TSL:3
Zfp384-214	ENSMUST00000145138.7	3603	No protein	Retained intron	-	-	TSL:5
Zfp384-211	ENSMUST00000137325.1	3200	No protein	Retained intron	-	-	TSL:2
Zfp384-212	ENSMUST00000140835.7	2470	No protein	Retained intron	-	-	TSL:2
Zfp384-215	ENSMUST00000145566.1	2438	No protein	Retained intron	-	-	TSL:2
Zfp384-210	ENSMUST00000132863.7	1861	No protein	Retained intron	-	-	TSL:5

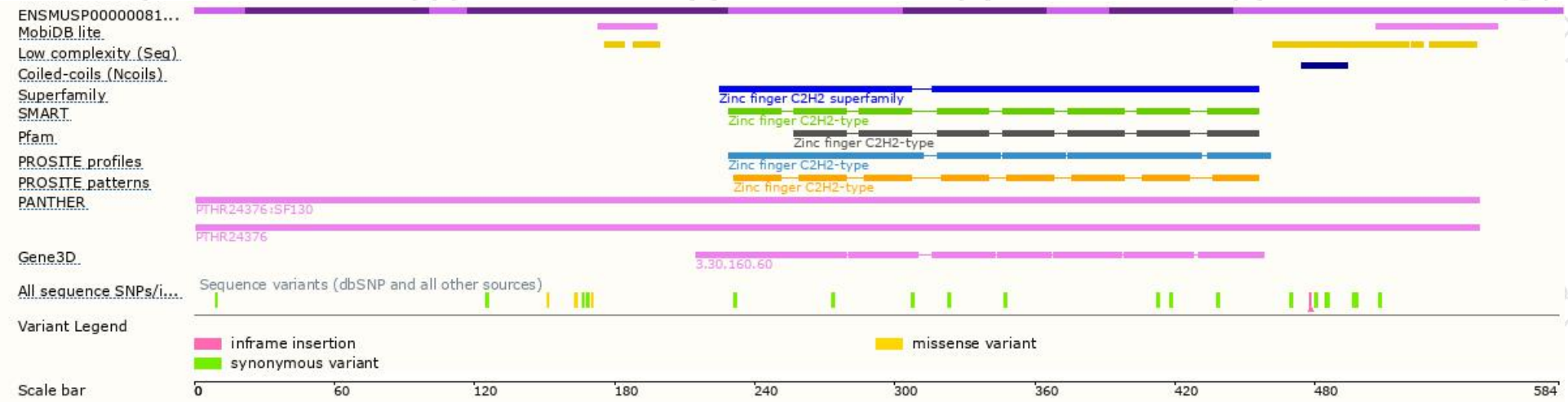
The strategy is based on the design of *Zfp384-203* transcript,the transcription is shown below:



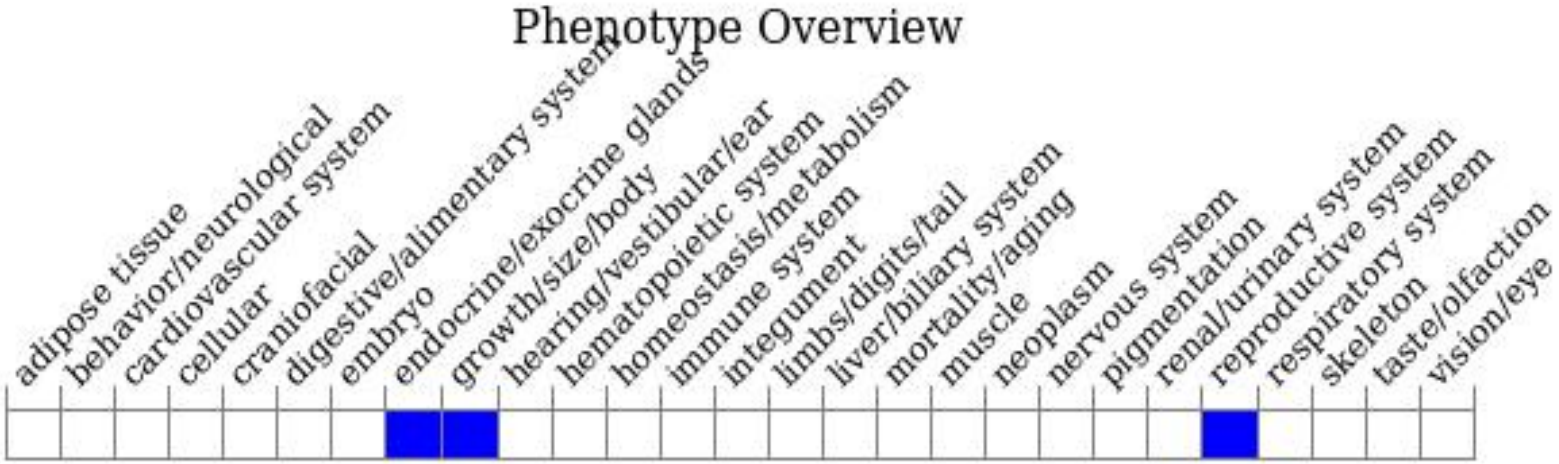
Genomic location distribution



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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