Foxj3 Cas9-CKO Strategy

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Project Overview

Project Name	***Foxj3***
Project type	**Cas9-CKO**
Strain background	**C57BL/6JGpt**

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Foxj3* gene. The schematic diagram is as follows:

Technical routes

The *Foxj3* gene has 10 transcripts. According to the structure of *Foxj3* gene, exon2-exon13 of *Foxj3-201* (ENSMUST00000044564.14) transcript is recommended as the knockout region.The region contains all 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 *Foxj3* 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 null mice have an abnormal skeletal muscle fiber type ratio in males as well as defects in muscle regeneration following injury.

The *Foxj3* gene is located on the Chr4. 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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Foxj3 forkhead box J3 [Mus musculus (house mouse)]

Gene ID: 230700, updated on 31-Jan-2019

Summary

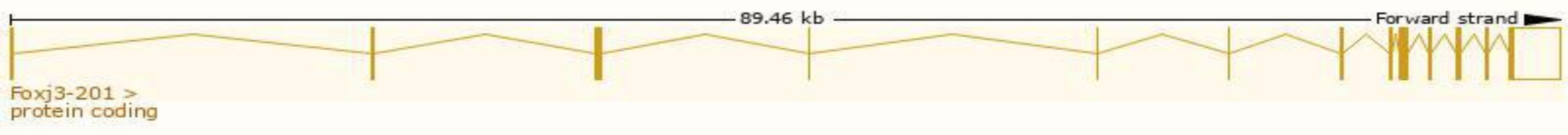
Official Symbol	Foxj3 provided by MGI
Official Full Name	forkhead box J3 provided byMGI
Primary source	MGI:MGI:2443432
See related	Ensembl:ENSMUSG00000032998
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	C330039G02Rik, Fhd6
Expression	Ubiquitous expression in CNS E18 (RPKM 9.4), whole brain E14.5 (RPKM 8.7) and 28 other tissuesSee more
Orthologs	human all

Transcript information Ensembl

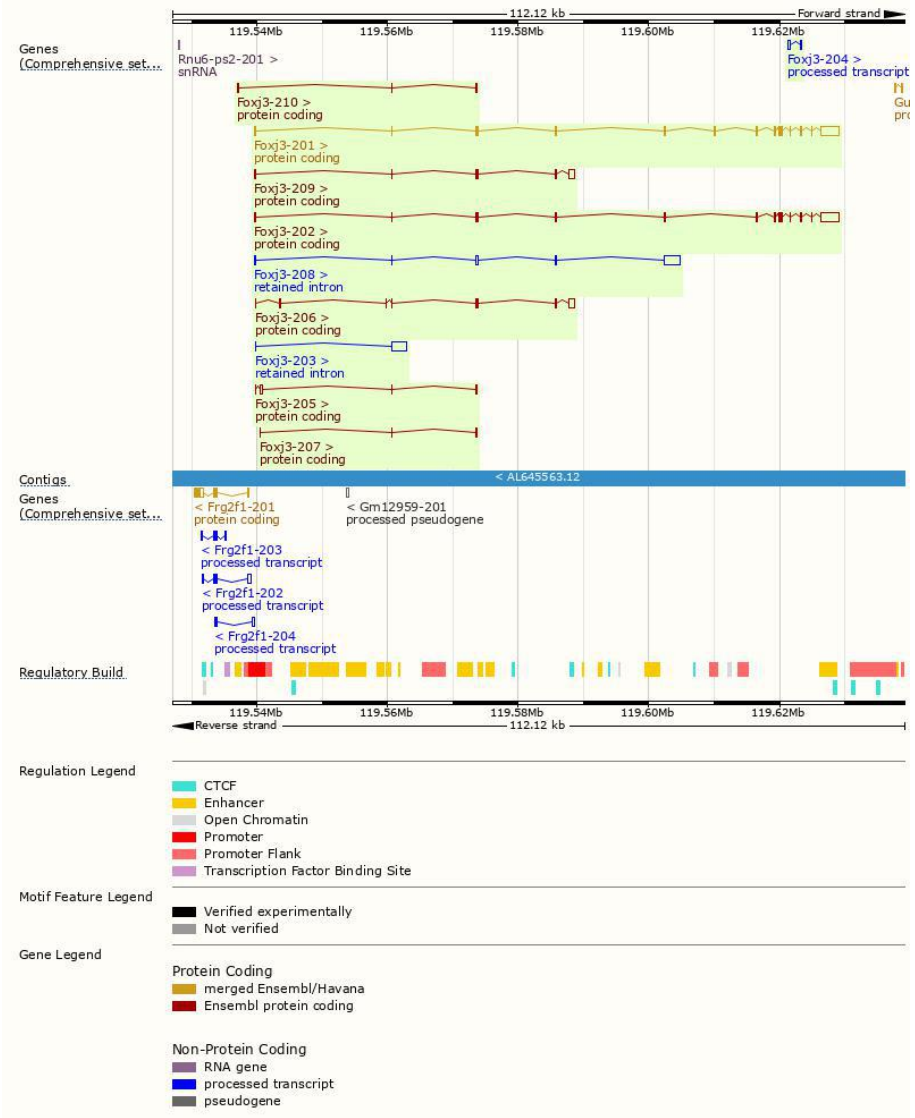
The gene has 10 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Foxj3-201	ENSMUST00000044564.14	4789	623aa	Protein coding	CCDS18585	Q8BUR3	TSL:1 GENCODE basic APPRIS P3
Foxj3-202	ENSMUST00000106310.8	4660	589aa	Protein coding	CCDS71462	Q8BUR3	TSL:1 GENCODE basic APPRIS ALT1
Foxj3-206	ENSMUST00000138845.8	1530	155aa	Protein coding	-	Q3TAY5	TSL:1 GENCODE basic
Foxj3-209	ENSMUST00000162267.7	1391	155aa	Protein coding	-	Q3TAY5	TSL:1 GENCODE basic
Foxj3-205	ENSMUST00000137560.7	499	71aa	Protein coding	-	E0CYX1	CDS 3' incomplete TSL:2
Foxj3-210	ENSMUST00000176012.7	368	62aa	Protein coding	-	H3BKK7	CDS 3' incomplete TSL:3
Foxj3-207	ENSMUST00000160219.1	367	104aa	Protein coding	-	E0CYS8	CDS 3' incomplete TSL:3
Foxj3-204	ENSMUST00000133097.1	553	No protein	Processed transcript	-	-	TSL:5
Foxj3-208	ENSMUST00000161196.1	3071	No protein	Retained intron	-	-	TSL:1
Foxj3-203	ENSMUST00000131413.1	2447	No protein	Retained intron	-	-	TSL:1

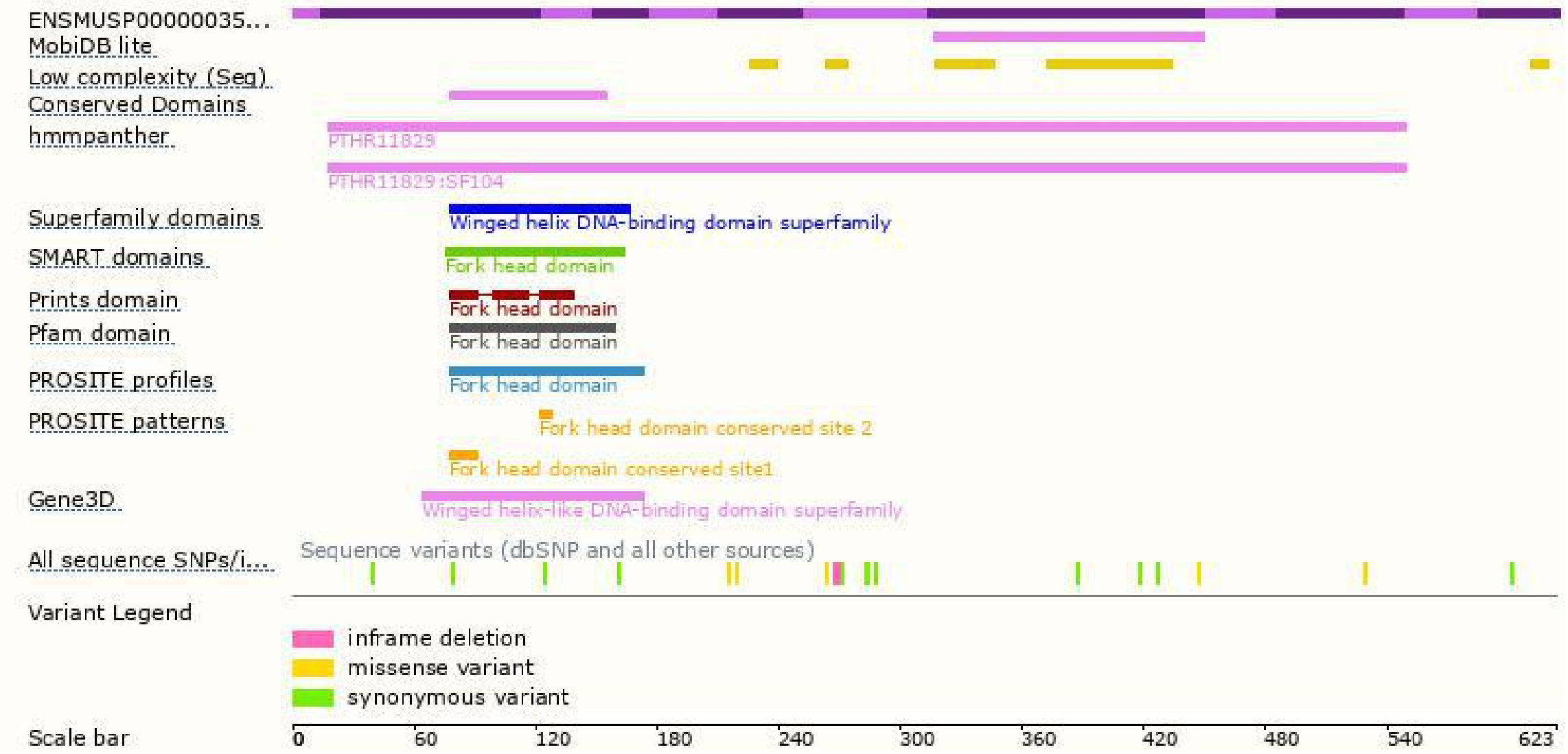
The strategy is based on the design of *Foxj3-201* transcript,The transcription is shown below



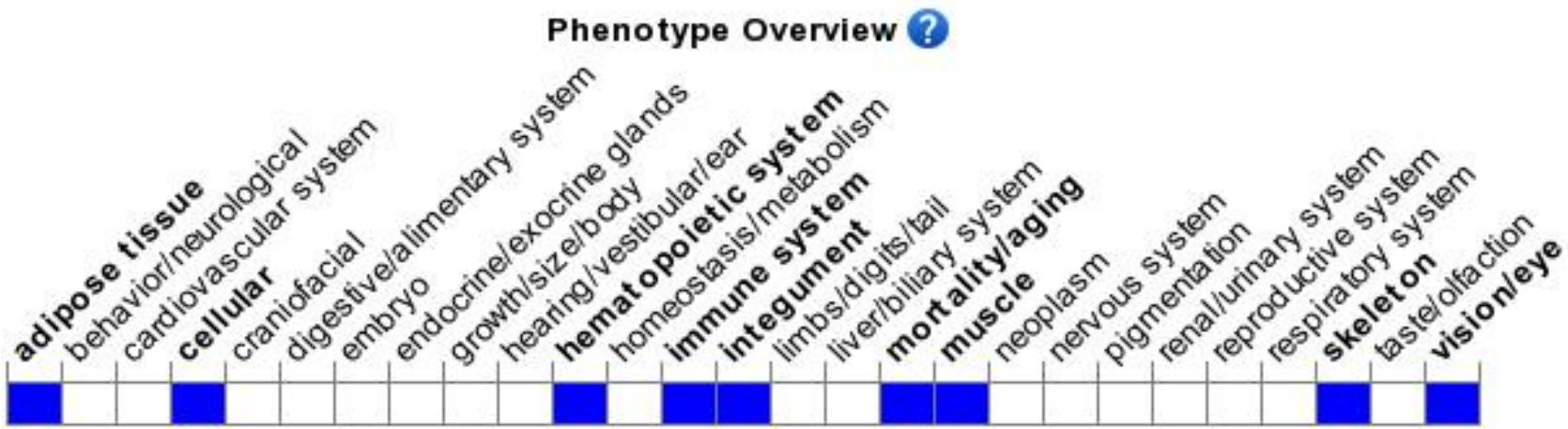
Genomic location distribution



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,Homozygous null mice have an abnormal skeletal muscle fiber type ratio in males as well as defects in muscle regeneration following injury.

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