Fyn Cas9-CKO Strategy

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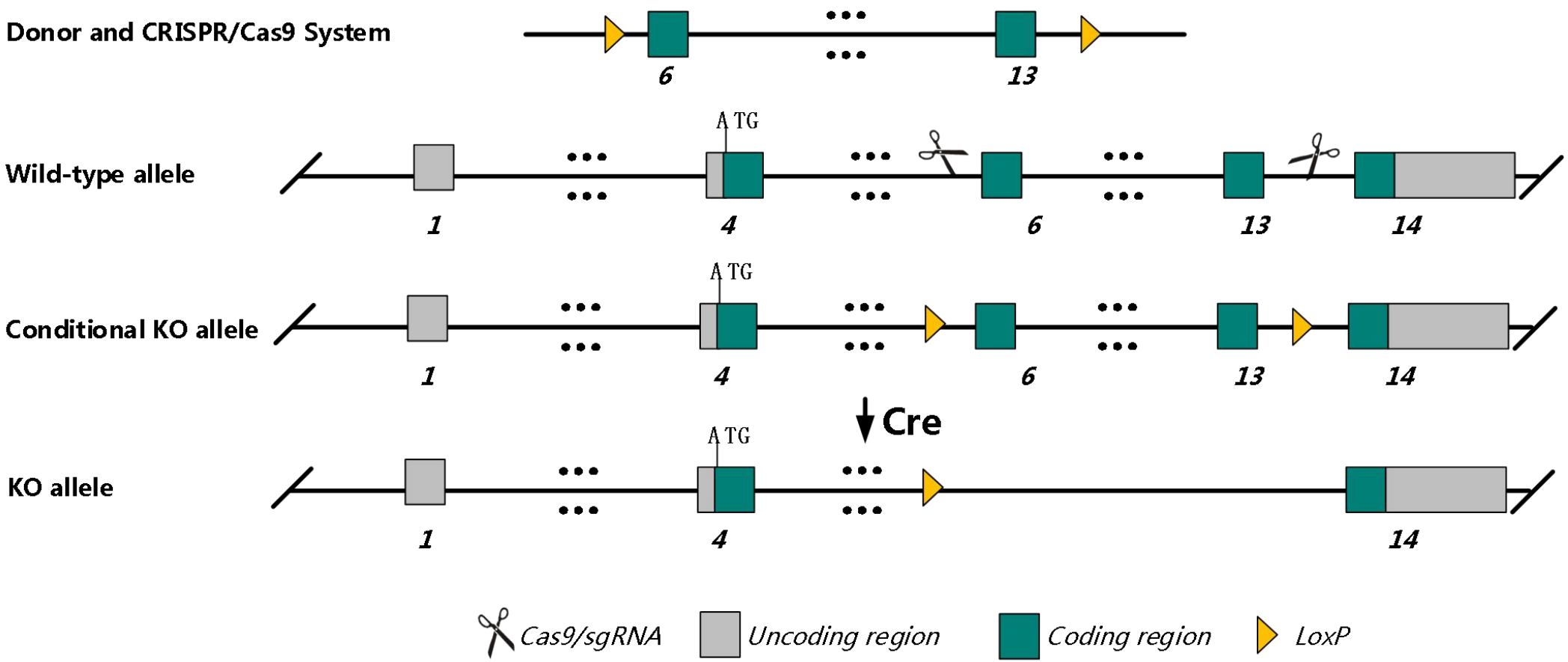
Project Overview

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

Conditional Knockout strategy

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



Technical routes

- The *Fyn* gene has 9 transcripts. According to the structure of *Fyn* gene, exon6-exon13 of *Fyn-201* (ENSMUST00000063091.12) transcript is recommended as the knockout region.The region contains 1052bp coding sequence. Knock out the region will result in disruption of protein function.

- In this project we use CRISPR/Cas9 technology to modify *Fyn* 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,Different targeted allele homozygotes show different defects, including seizure susceptibility, anxiety, impaired suckling, myelination, LTP and spatial learning, and defects in immune system, circadian rhythm, testes weight and olfactory bulb formation.

- The *Fyn* gene is located on the Chr10. 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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Fyn Fyn proto-oncogene [Mus musculus (house mouse)]

Gene ID: 14360, updated on 2-Apr-2019

Summary

Official Symbol	Fyn provided by MGI
Official Full Name	Fyn proto-oncogene provided by MGI
Primary source	MGI:MGI:95602
See related	Ensembl:ENSMUSG00000019843
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	AI448320, AW552119
Expression	Ubiquitous expression in CNS E18 (RPKM 23.2), CNS E14 (RPKM 20.7) and 27 other tissues See more
Orthologs	human all

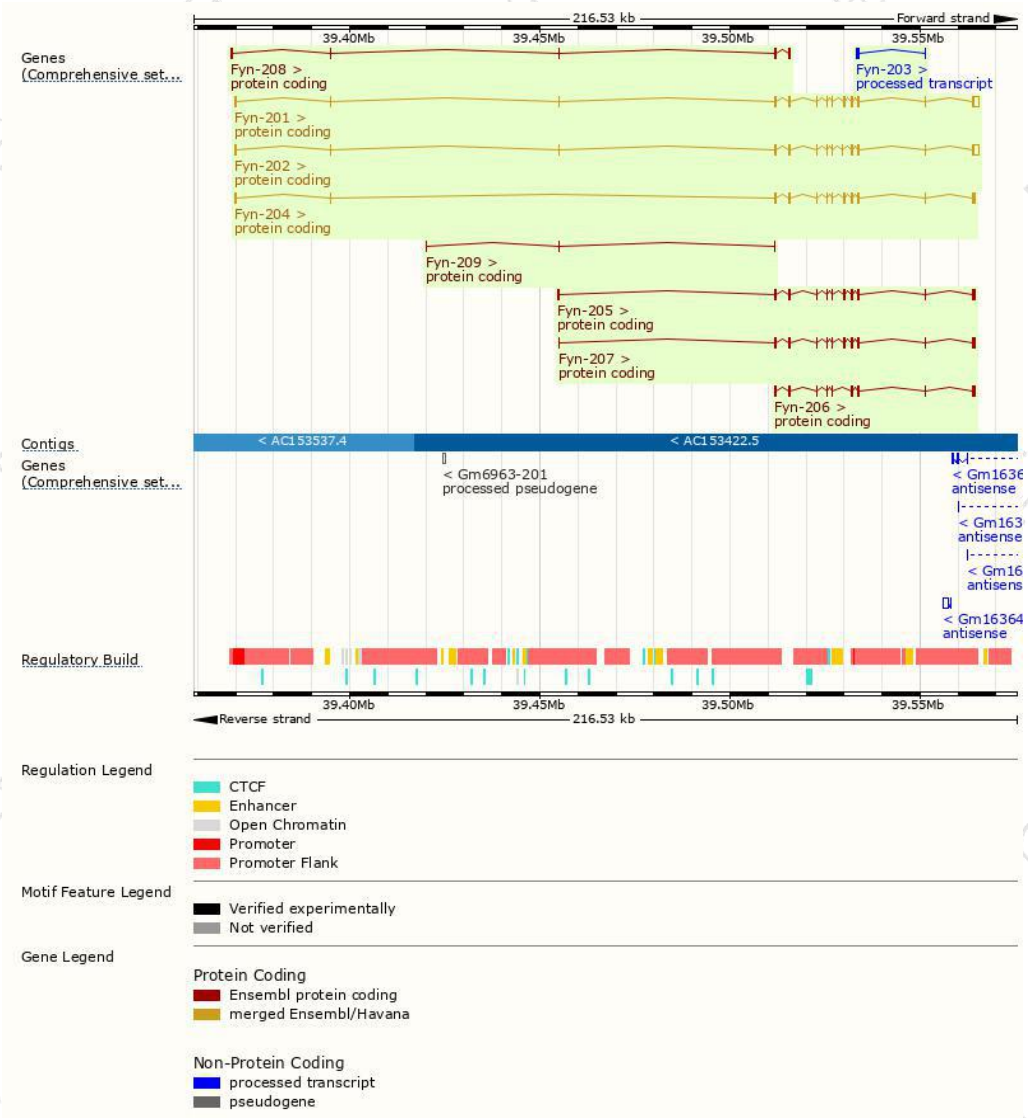
Transcript information（Ensembl）

The gene has 9 transcripts,all transcripts are shown below:

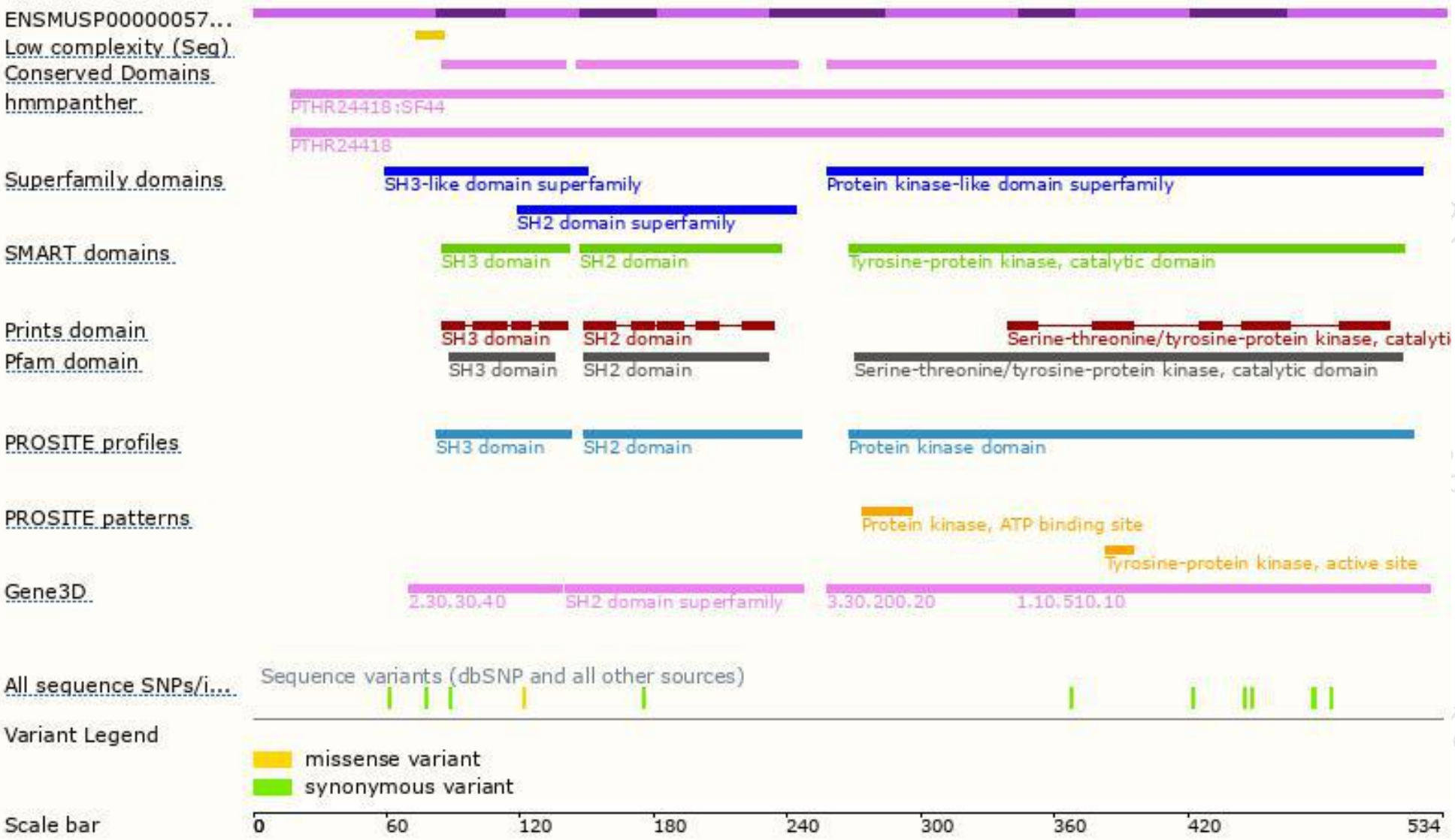
Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Fyn-201	ENSMUST00000063091.12	3562	534aa	Protein coding	CCDS23788	P39688	TSL:1 GENCODE basic APPRIS P3
Fyn-202	ENSMUST00000099967.9	3528	537aa	Protein coding	CCDS48538	P39688	TSL:1 GENCODE basic APPRIS ALT1
Fyn-204	ENSMUST00000126486.7	2495	534aa	Protein coding	CCDS23788	P39688	TSL:1 GENCODE basic APPRIS P3
Fyn-207	ENSMUST00000146287.7	2135	534aa	Protein coding	CCDS23788	P39688	TSL:1 GENCODE basic APPRIS P3
Fyn-205	ENSMUST00000135242.7	2114	534aa	Protein coding	CCDS23788	P39688	TSL:1 GENCODE basic APPRIS P3
Fyn-206	ENSMUST00000136659.1	1910	482aa	Protein coding	-	D3YZ57	TSL:5 GENCODE basic
Fyn-208	ENSMUST00000148152.7	675	114aa	Protein coding	-	D3YZA2	CDS 3' incomplete TSL:3
Fyn-209	ENSMUST00000157009.7	441	36aa	Protein coding	-	D3YVZ0	CDS 3' incomplete TSL:2
Fyn-203	ENSMUST00000123205.1	333	No protein	Processed transcript	-	-	TSL:3

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

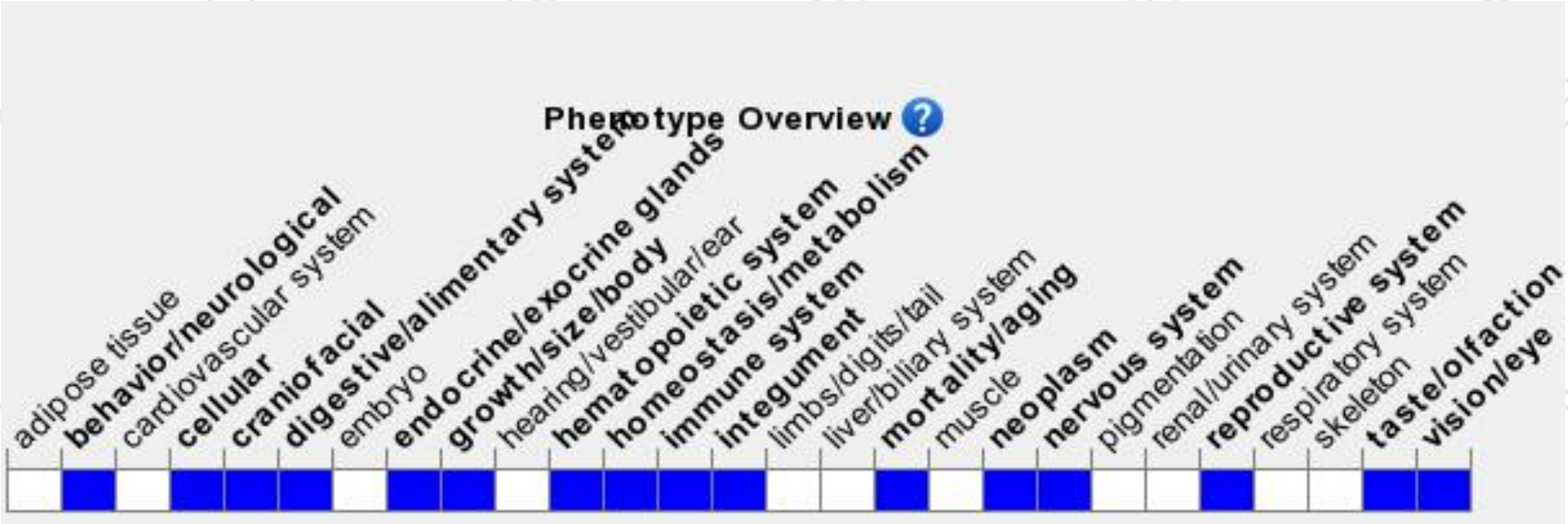
Genomic location distribution



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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