Lyn Cas9-CKO Strategy

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Design Date: 2019-11-14

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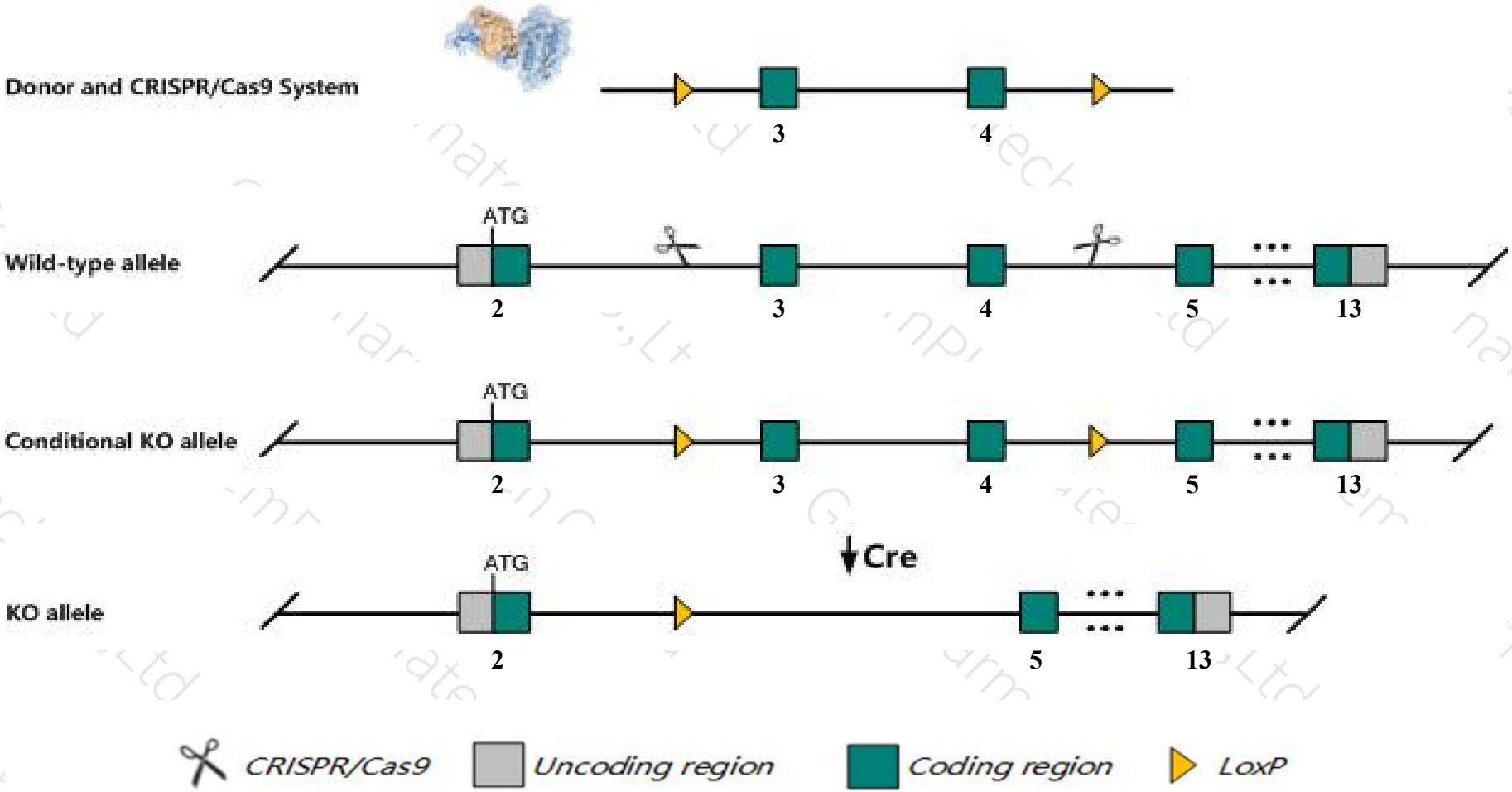
Project Overview

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

Conditional Knockout strategy

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



Technical routes

- The *Lyn* gene has 4 transcripts. According to the structure of *Lyn* gene, exon3-exon4 of *Lyn-201* (ENSMUST00000041377.12) transcript is recommended as the knockout region.The region contains 152bp coding sequence. Knock out the region will result in disruption of protein function.

- In this project we use CRISPR/Cas9 technology to modify *Lyn* 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,Homozygotes for targeted null mutations exhibit splenomegaly, reduced numbers of peripheral B cells, impaired immune responses, IgM hyperglobulinemia, autoimmunity with glomerulonephritis, and monocyte/macrophage tumors.

- The *Lyn* 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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Lyn LYN proto-oncogene, Src family tyrosine kinase [Mus musculus (house mouse)]

Gene ID: 17096, updated on 2-Apr-2019

Summary

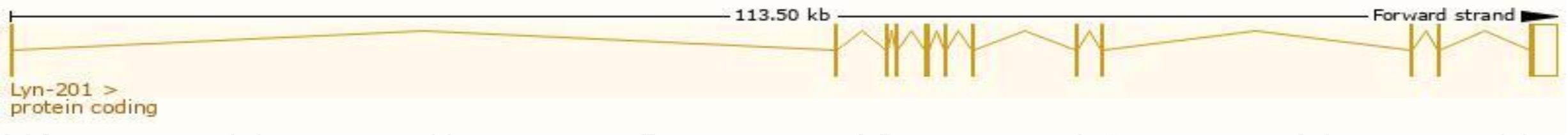
Official Symbol	Lyn provided by MGI
Official Full Name	LYN proto-oncogene, Src family tyrosine kinase provided by MGI
Primary source	MGI:MGI:96892
See related	Ensembl:ENSMUSG00000042228
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	AA407514, Hck-2, p53Lyn, p56Lyn
Expression	Broad expression in spleen adult (RPKM 46.2), lung adult (RPKM 24.2) and 23 other tissues See more
Orthologs	human all

Transcript information（Ensembl）

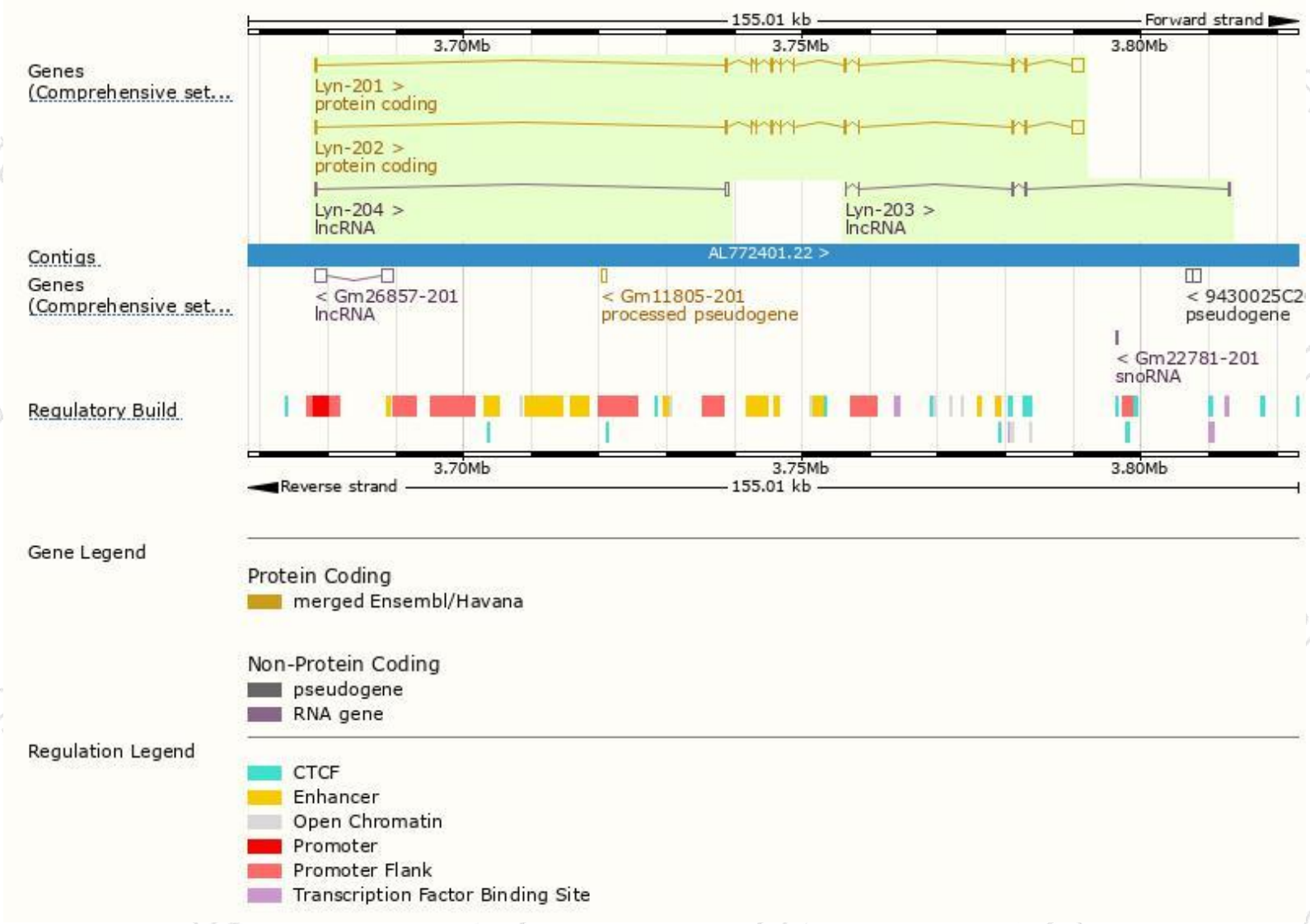
The gene has 4 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Lyn-201	ENSMUST00000041377.12	3463	512aa	Protein coding	CCDS51109	P25911 Q3TCS3	TSL:1 GENCODE basic APPRIS ALT1
Lyn-202	ENSMUST00000103010.3	3387	491aa	Protein coding	CCDS17939	P25911 Q3U6Q5	TSL:1 GENCODE basic APPRIS P3
Lyn-204	ENSMUST00000145083.1	687	No protein	lncRNA	-	-	TSL:1
Lyn-203	ENSMUST00000137943.1	685	No protein	lncRNA	-	-	TSL:5

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

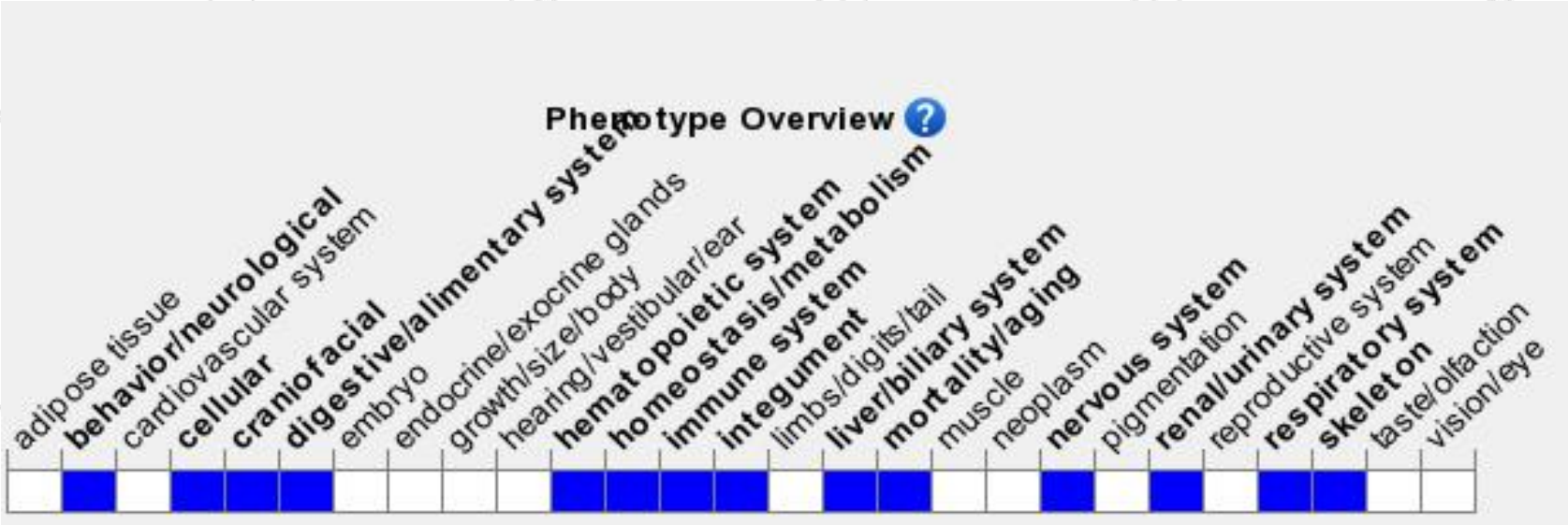


Genomic location distribution



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,Homozygotes for targeted null mutations exhibit splenomegaly, reduced numbers of peripheral B cells, impaired immune responses, IgM hyperglobulinemia, autoimmunity with glomerulonephritis, and monocyte/macrophage tumors.

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

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