

***Tubb2a* Cas9-CKO Strategy**

Designer:

JiaYu

Reviewer:

Xiaojing Li

Design Date:

2020-1-23

Project Overview

Project Name

Tubb2a

Project type

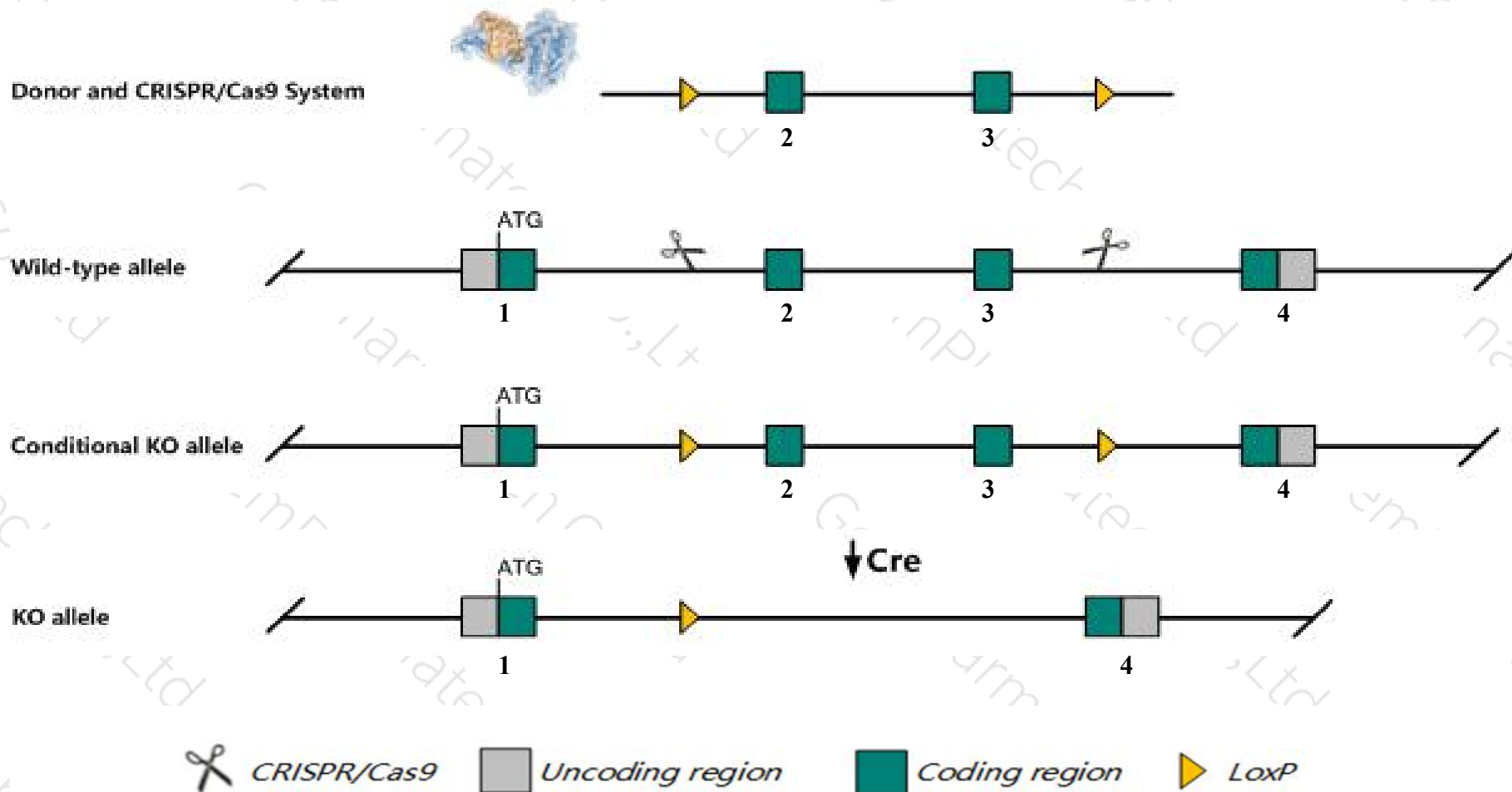
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Tubb2a* gene. The schematic diagram is as follows:



Technical routes

- The *Tubb2a* gene has 1 transcript. According to the structure of *Tubb2a* gene, exon2-exon3 of *Tubb2a-201* (ENSMUST00000056427.9) transcript is recommended as the knockout region. The region contains 220bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Tubb2a* 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

- The *Tubb2a* gene is located on the Chr13. 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)

Tubb2a tubulin, beta 2A class IIA [*Mus musculus* (house mouse)]

Gene ID: 22151, updated on 11-Jan-2020

Summary

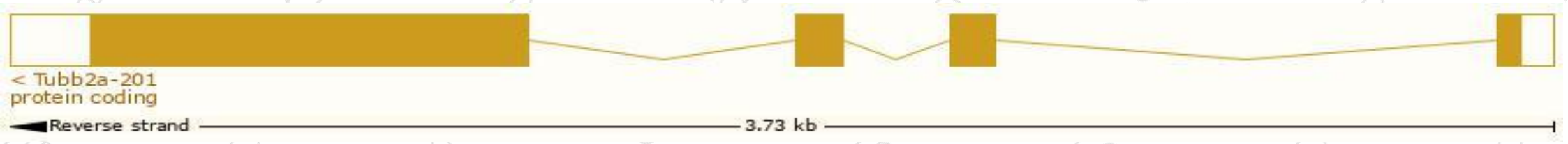
Official Symbol	Tubb2a provided by MGI
Official Full Name	tubulin, beta 2A class IIA provided by MGI
Primary source	MGI:MGI:107861
See related	Ensembl:ENSMUSG00000058672
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	Tubb2; M(beta)2
Expression	Biased expression in CNS E18 (RPKM 3190.8), whole brain E14.5 (RPKM 2434.4) and 9 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

The gene has 1 transcript, and the transcript is shown below:

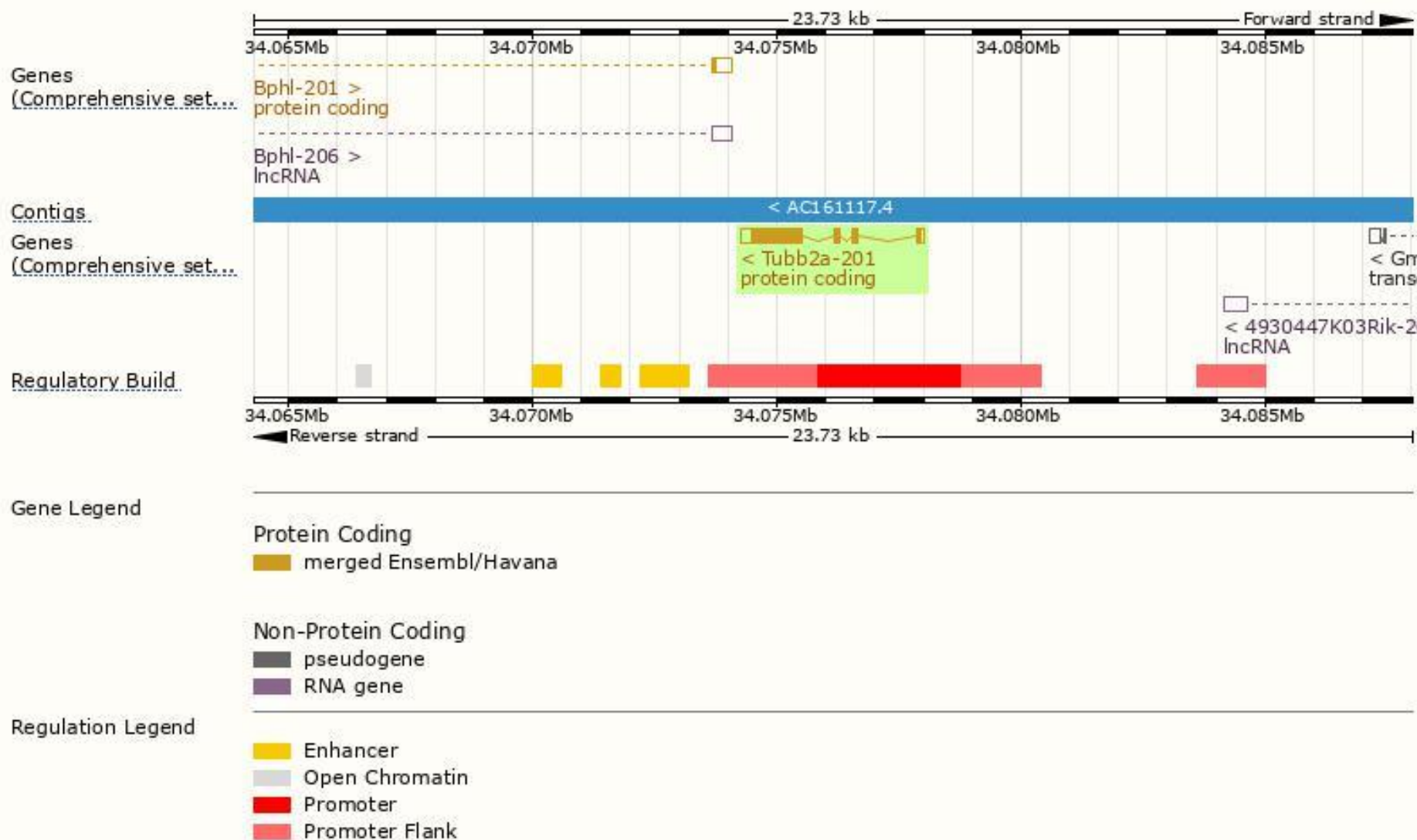
Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Tubb2a-201	ENSMUST00000056427.9	1610	445aa	Protein coding	CCDS26444	Q7TMM9	TSL:1 Gencode basic APPRIS P1

The strategy is based on the design of *Tubb2a-201* transcript, The transcription is shown below





Genomic location distribution



Protein domain



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

Tel: 400-9660890

