

Actn2 Cas9-CKO Strategy

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Reviewer:

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Project Overview

Project Name

Actn2

Project type

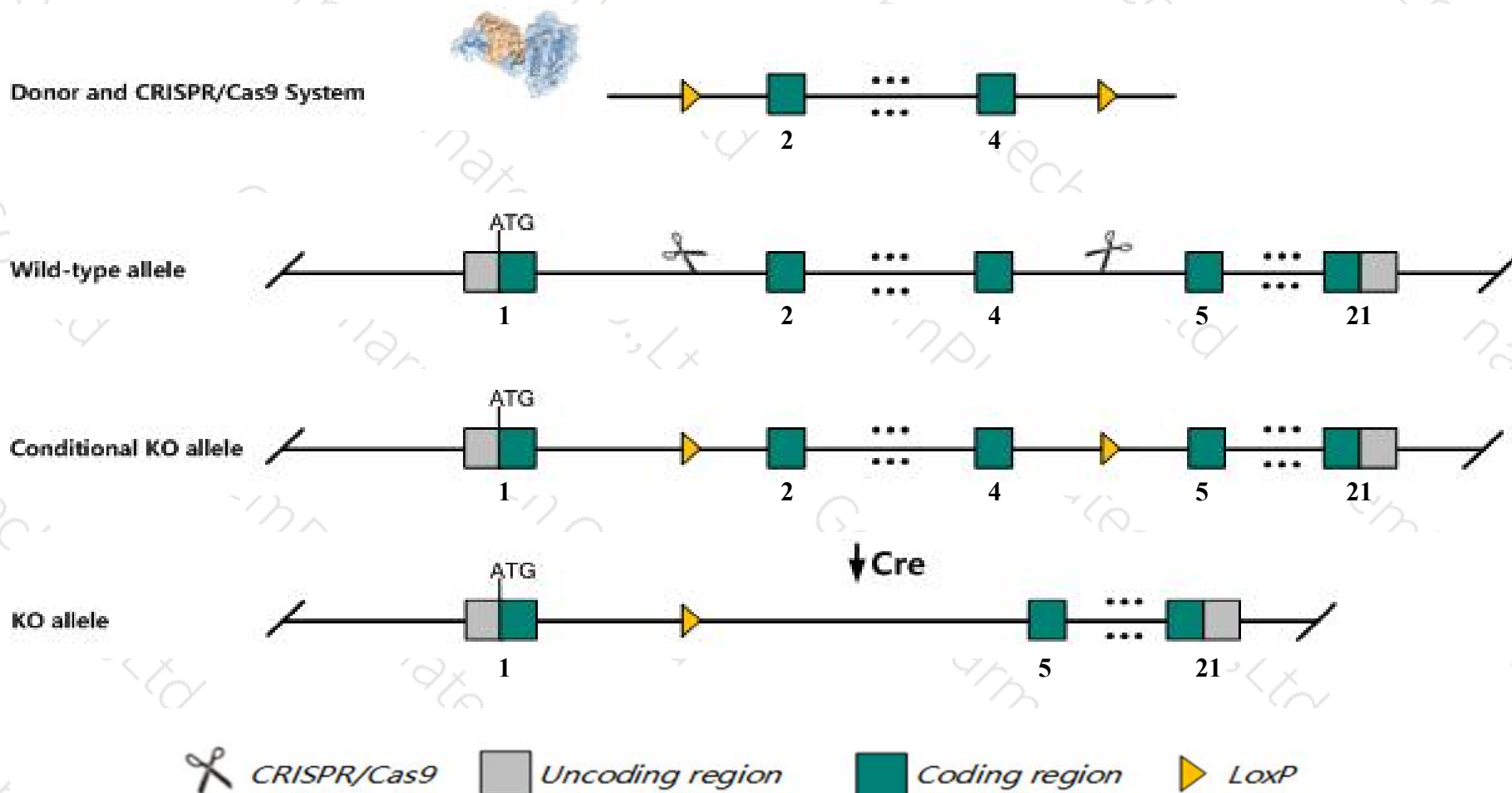
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Actn2* gene. The schematic diagram is as follows:



- The *Actn2* gene has 5 transcripts. According to the structure of *Actn2* gene, exon2-exon4 of *Actn2-201* (ENSMUST00000064204.13) transcript is recommended as the knockout region. The region contains 322bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Actn2* 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.

- The *Actn2* 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.
- The information of the transcript *Actn2-204* is incomplete and the effect of this strategy on this transcript is unknown.
- 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)

Actn2 actinin alpha 2 [*Mus musculus* (house mouse)]

Gene ID: 11472, updated on 8-Oct-2019

Summary

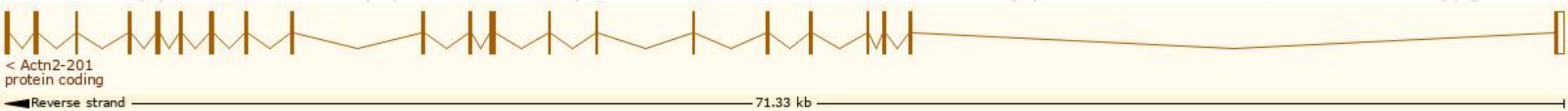
Official Symbol	Actn2 provided by MGI
Official Full Name	actinin alpha 2 provided by MGI
Primary source	MGI:MGI:109192
See related	Ensembl:ENSMUSG00000052374
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	1110008F24Rik
Expression	Biased expression in heart adult (RPKM 363.9), limb E14.5 (RPKM 39.1) and 1 other tissue See more
Orthologs	human all

Transcript information (Ensembl)

The gene has 5 transcripts,all transcripts are shown below:

Name ▲	Transcript ID ▲	bp ▲	Protein ▲	Biotype ▲	CCDS ▲	UniProt ▲	Flags ▲
Actn2-201	ENSMUST00000064204.13	3013	894aa	Protein coding	CCDS26239	Q9JI91	TSL:1 GENCODE basic APPRIS P1
Actn2-202	ENSMUST00000110616.1	1361	No protein	Retained intron	-	-	TSL:1
Actn2-203	ENSMUST00000168193.7	2920	894aa	Protein coding	CCDS26239	Q9JI91	TSL:5 GENCODE basic APPRIS P1
Actn2-204	ENSMUST00000221162.2	576	192aa	Protein coding	-	A0A1Y7VMW4	CDS 5' and 3' incomplete TSL:5
Actn2-205	ENSMUST00000222034.1	501	No protein	lncRNA	-	-	TSL:3

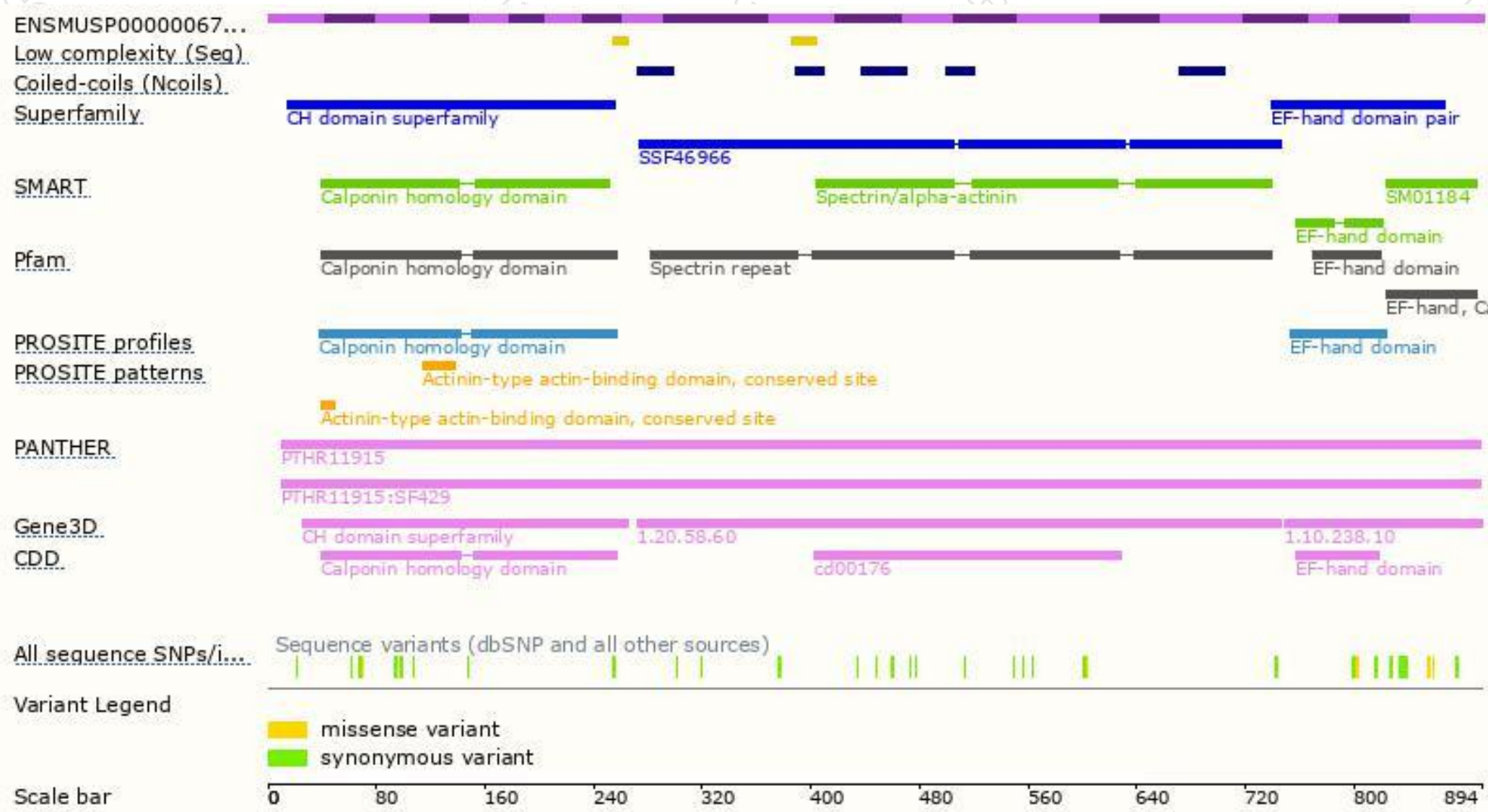
The strategy is based on the design of *Actn2-201* transcript,The transcription is shown below:



Genomic location distribution



Protein domain



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

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