

Isca1 Cas9-CKO Strategy

Designer:

Huan Fan

Reviewer:

Huan Wang

Design Date:

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Project Overview

Project Name

Isca1

Project type

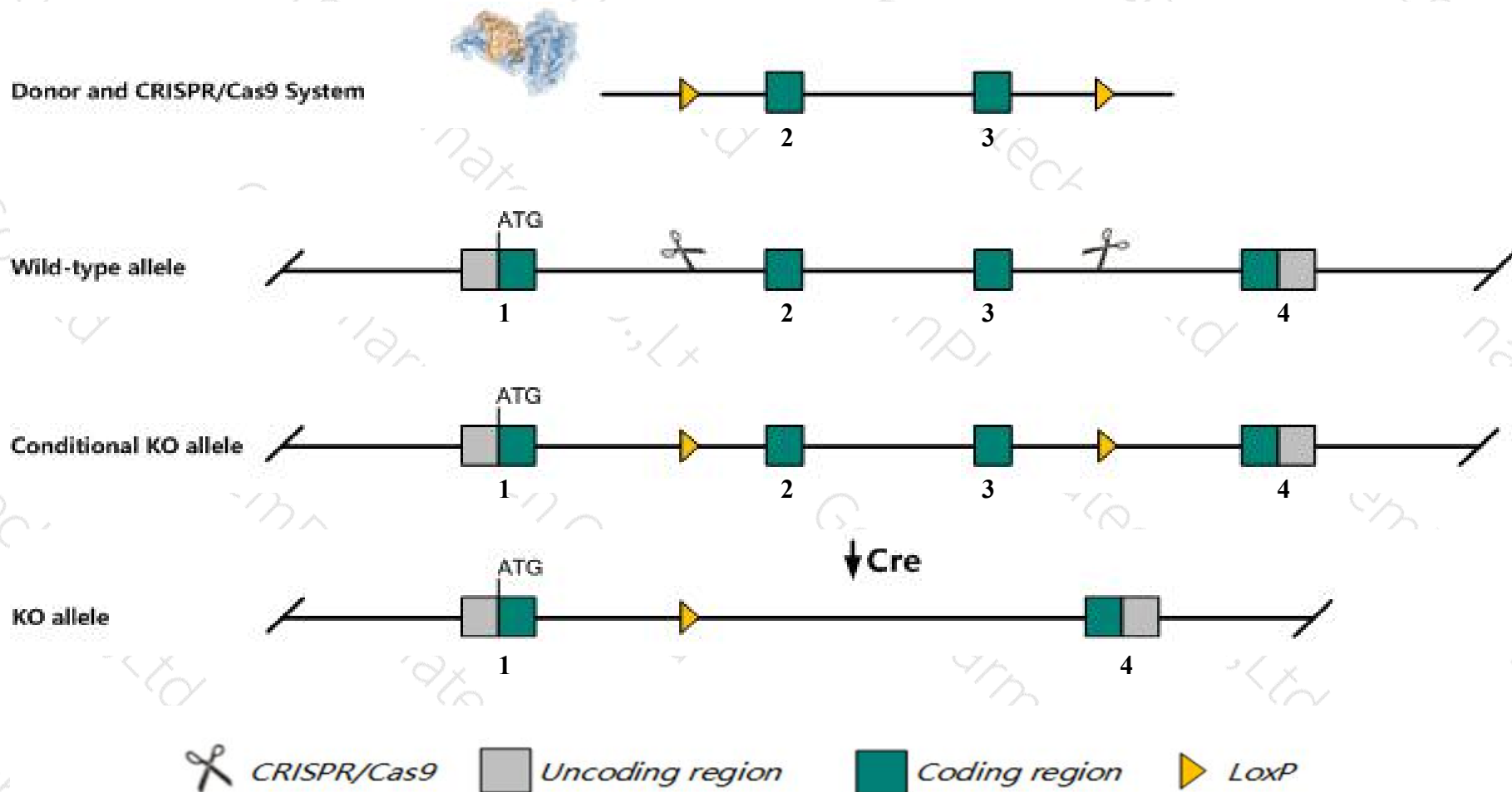
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Isca1* gene. The schematic diagram is as follows:



Technical routes

- The *Isca1* gene has 7 transcripts. According to the structure of *Isca1* gene, exon2-exon3 of *Isca1-201* (ENSMUST00000057115.6) transcript is recommended as the knockout region. The region contains 160bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Isca1* 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 *Iscal* 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 KO region contains functional region of the *Gm49354* gene. Knockout the region may affect the function of *Gm49354* gene.
- 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)

Isca1 iron-sulfur cluster assembly 1 [Mus musculus (house mouse)]

Gene ID: 69046, updated on 31-Jan-2019

Summary



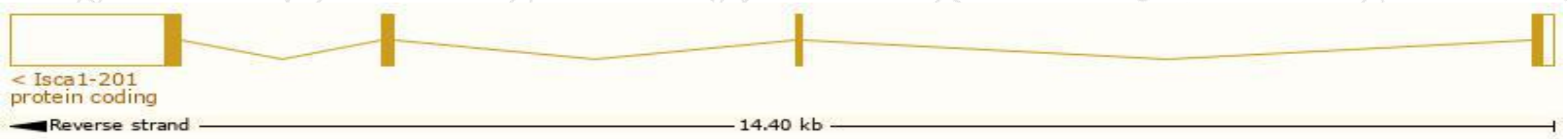
Official Symbol	Isca1 provided by MGI
Official Full Name	iron-sulfur cluster assembly 1 provided by MGI
Primary source	MGI:MGI:1916296
See related	Ensembl:ENSMUSG00000044792
Gene type	protein coding
RefSeq status	PROVISIONAL
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	1810010A06Rik, Hbld2
Expression	Ubiquitous expression in heart adult (RPKM 131.8), liver E14.5 (RPKM 87.6) and 28 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

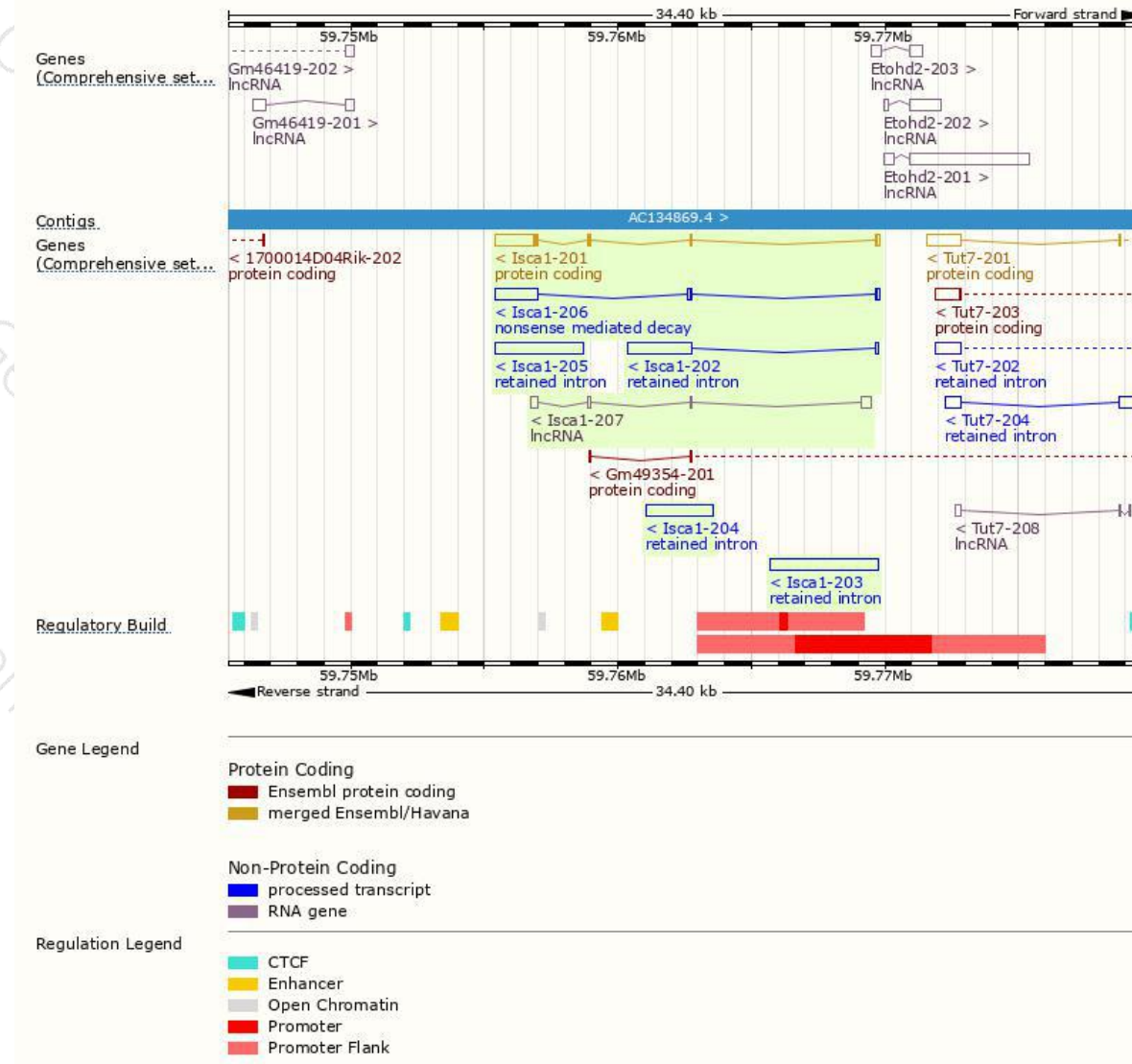
The gene has 7 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Isca1-201	ENSMUST00000057115.6	1942	129aa	Protein coding	CCDS26578	Q9D924	TSL:1 GENCODE basic APPRIS P1
Isca1-206	ENSMUST00000225850.1	1918	49aa	Nonsense mediated decay	-	A0A286YCW6	
Isca1-203	ENSMUST00000224636.1	4060	No protein	Retained intron	-	-	
Isca1-205	ENSMUST00000225795.1	3280	No protein	Retained intron	-	-	
Isca1-202	ENSMUST00000160628.1	2553	No protein	Retained intron	-	-	TSL:1
Isca1-204	ENSMUST00000225284.1	2518	No protein	Retained intron	-	-	
Isca1-207	ENSMUST00000225877.1	754	No protein	lncRNA	-	-	

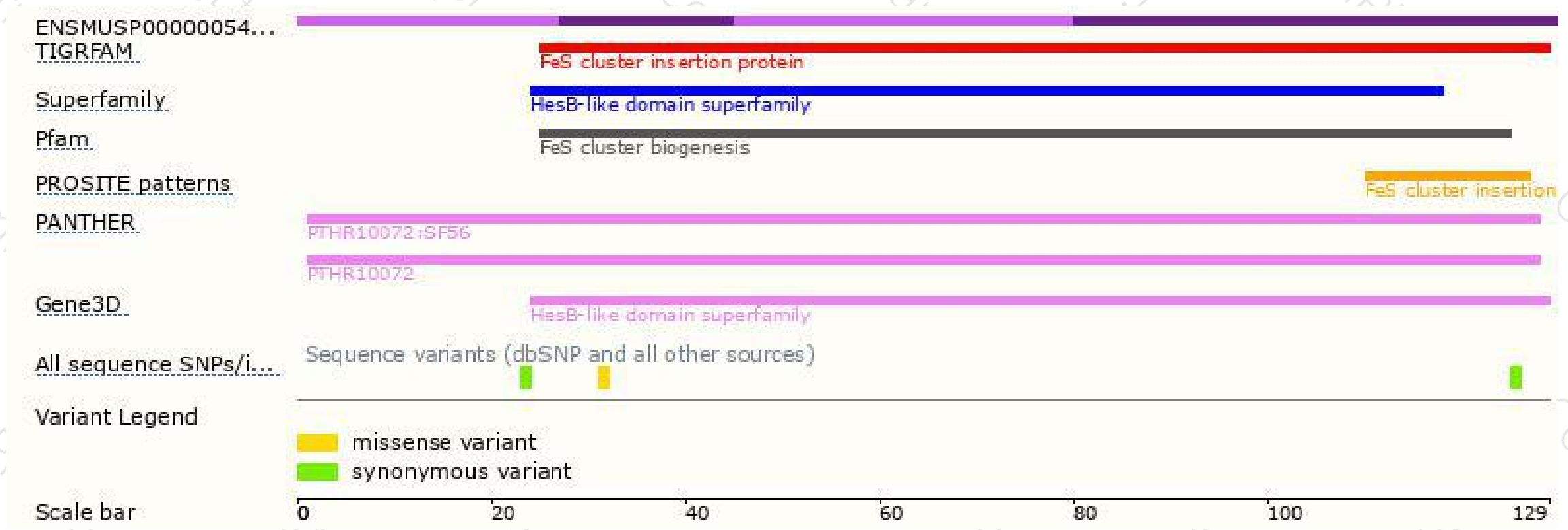
The strategy is based on the design of *Isca1-201* transcript,The transcription is shown below



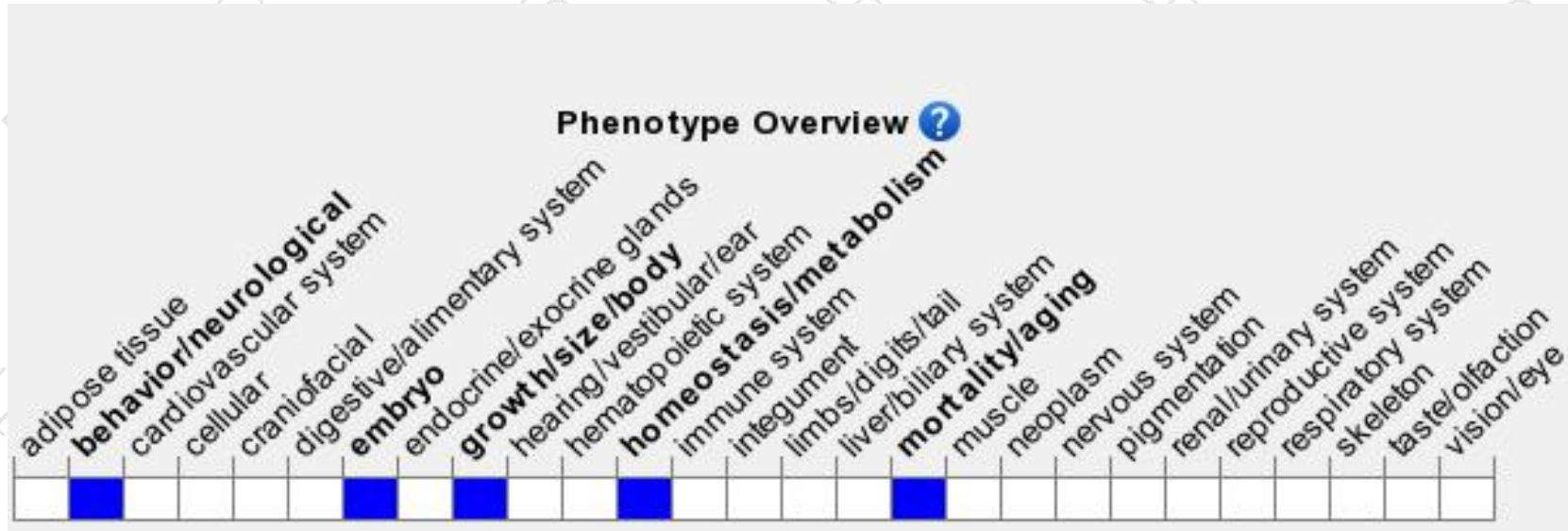
Genomic location distribution



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/>).

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

Tel: 400-9660890

