

Eif4a1 Cas9-CKO Strategy

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Reviewer:

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Design Date:

2019-12-24

Project Overview

Project Name

Eif4a1

Project type

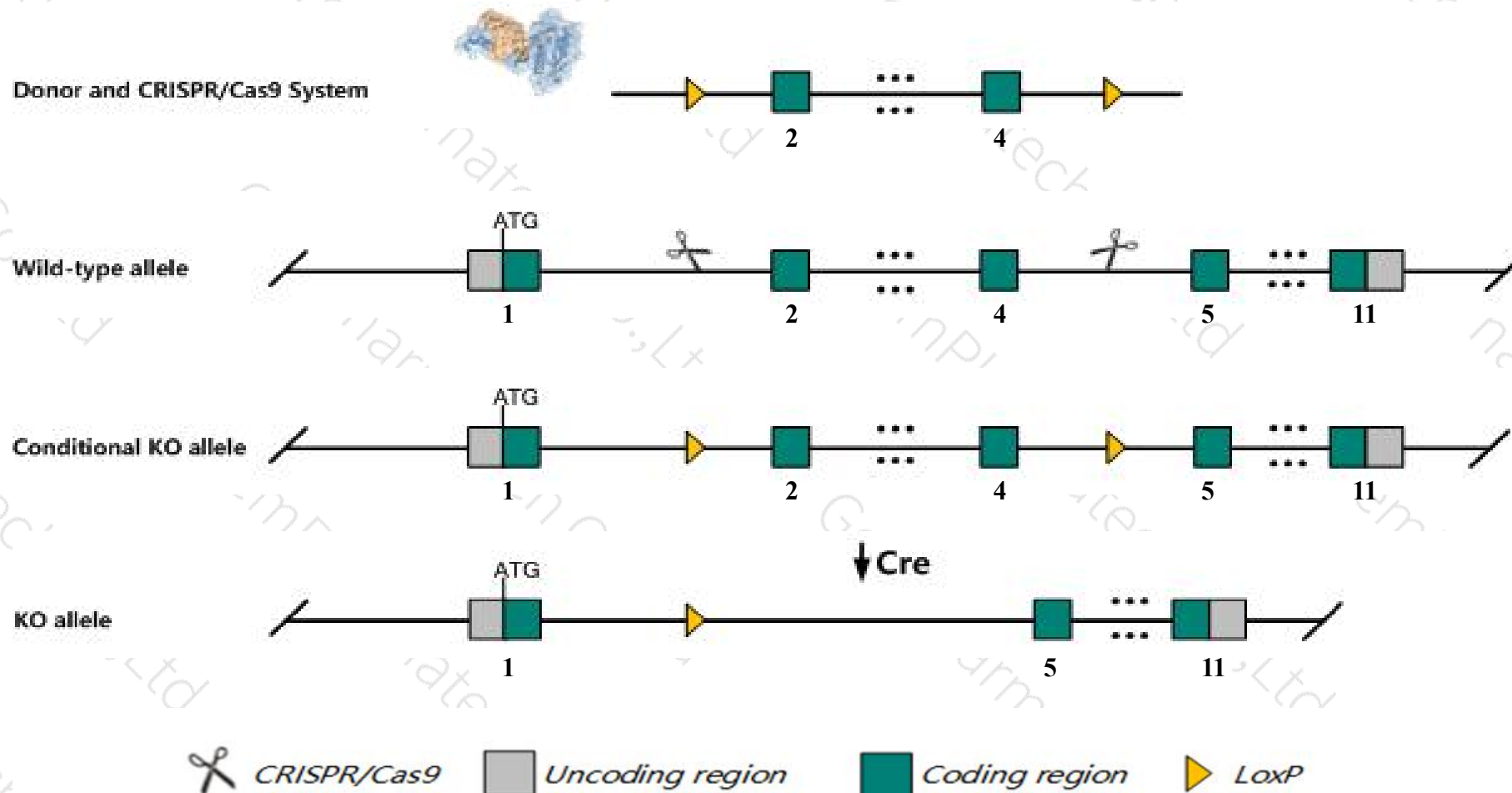
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Eif4a1* gene. The schematic diagram is as follows:



Technical routes

- The *Eif4a1* gene has 13 transcripts. According to the structure of *Eif4a1* gene, exon2-exon4 of *Eif4a1-213* (ENSMUST00000163666.2) 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 *Eif4a1* 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.

- This strategy may affect the 5-terminal regulation of *Gm22988*, *Gm24029*, *Gm25835*, and *Cd68* genes.
- The *Eif4a1* gene is located on the Chr11. 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)

Eif4a1 eukaryotic translation initiation factor 4A1 [Mus musculus (house mouse)]

Gene ID: 13681, updated on 31-Jan-2019

Summary



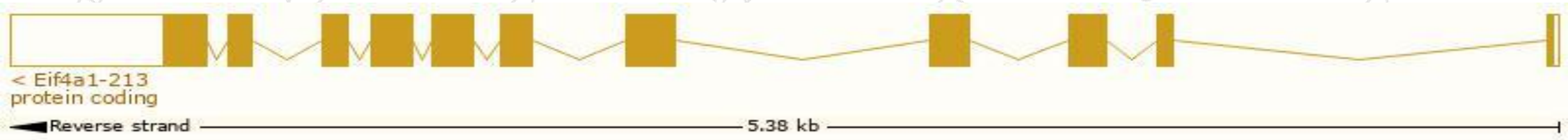
Official Symbol	Eif4a1 provided by MGI
Official Full Name	eukaryotic translation initiation factor 4A1 provided by MGI
Primary source	MGI:MGI:95303
See related	Ensembl:ENSMUSG00000059796
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	BM-010, Ddx2a, Eif4
Expression	Ubiquitous expression in CNS E11.5 (RPKM 322.5), placenta adult (RPKM 214.5) and 26 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

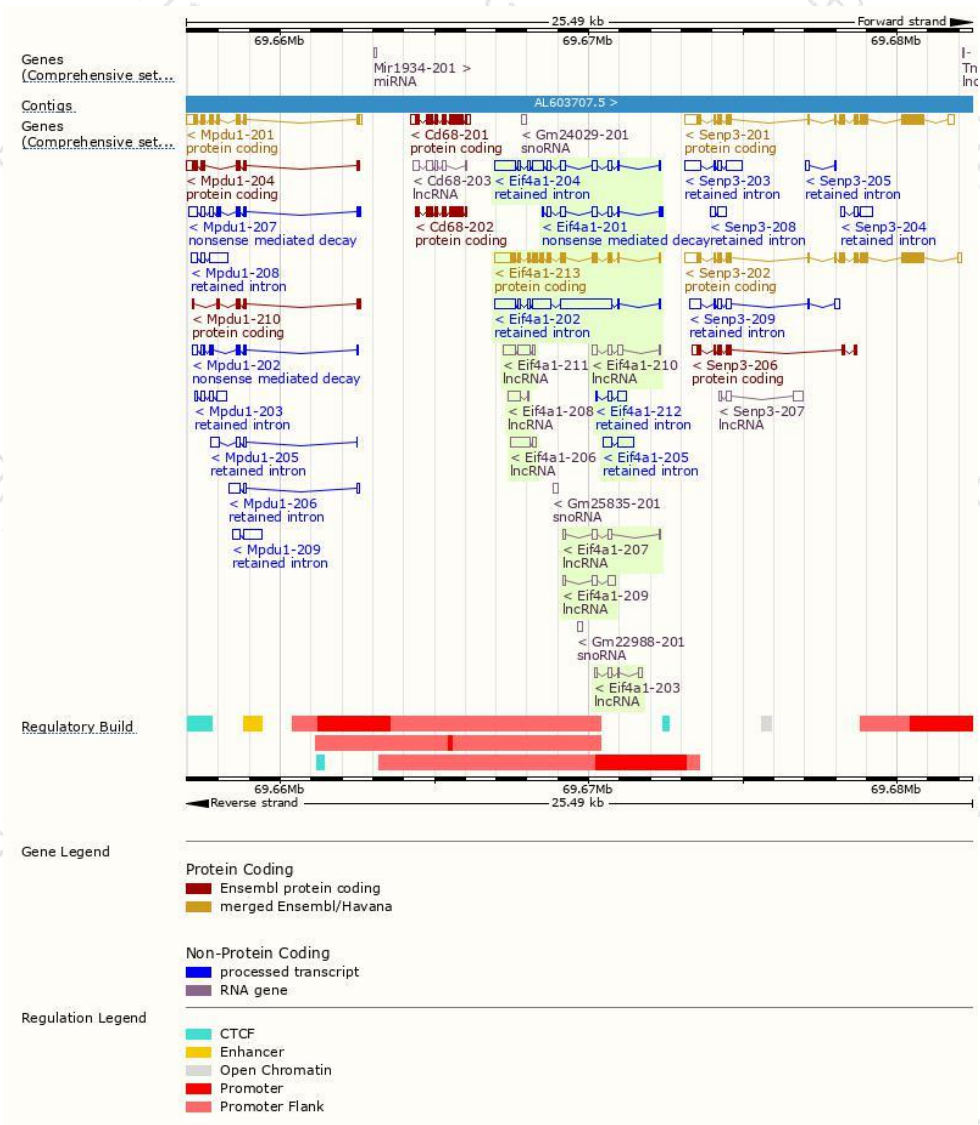
The gene has 13 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Elf4a1-213	ENSMUST00000163666.2	1774	406aa	Protein coding	CCDS24904	P60843 Q5F2A7	TSL:1 GENCODE basic APPRIS P1
Elf4a1-201	ENSMUST00000102589.11	813	50aa	Nonsense mediated decay	-	K3W4Q6	TSL:1
Elf4a1-202	ENSMUST00000123995.7	3167	No protein	Retained intron	-	-	TSL:2
Elf4a1-204	ENSMUST00000128519.7	1845	No protein	Retained intron	-	-	TSL:2
Elf4a1-205	ENSMUST00000129295.1	802	No protein	Retained intron	-	-	TSL:2
Elf4a1-212	ENSMUST00000145289.1	453	No protein	Retained intron	-	-	TSL:1
Elf4a1-211	ENSMUST00000142348.1	855	No protein	lncRNA	-	-	TSL:3
Elf4a1-206	ENSMUST00000133067.1	753	No protein	lncRNA	-	-	TSL:2
Elf4a1-209	ENSMUST00000140310.7	493	No protein	lncRNA	-	-	TSL:2
Elf4a1-210	ENSMUST00000142214.7	484	No protein	lncRNA	-	-	TSL:3
Elf4a1-208	ENSMUST00000140186.1	435	No protein	lncRNA	-	-	TSL:2
Elf4a1-207	ENSMUST00000139299.7	403	No protein	lncRNA	-	-	TSL:3
Elf4a1-203	ENSMUST00000127677.7	401	No protein	lncRNA	-	-	TSL:2

The strategy is based on the design of *Elf4a1-213* 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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