

Usp15 Cas9-KO Strategy

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Reviewer:

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Project Overview

Project Name

Usp15

Project type

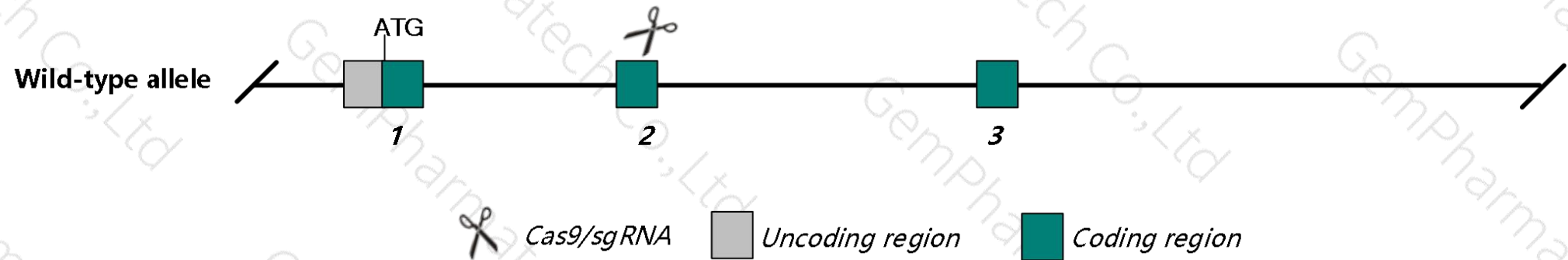
Cas9-KO

Strain background

C57BL/6N

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Usp15* gene. The schematic diagram is as follows:



- In this project we use CRISPR/Cas9 technology to modify *Usp15* gene. The brief process is as follows: sgRNA was transcribed in vitro. Cas9 and sgRNA were microinjected into the fertilized eggs of C57BL/6N 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/6N mice.

- According to the existing MGI data, Mice homozygous for a knock-out allele or ENU induced allele exhibit resistance to pathological neuroinflammation.
- The *Usp15* gene is located on the Chr10. 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 the gene knockout on gene transcription, RNA splicing and protein translation cannot be predicted at the existing technology level.

Gene information (NCBI)

Usp15 ubiquitin specific peptidase 15 [*Mus musculus* (house mouse)]

Gene ID: 14479, updated on 12-Aug-2019

Summary

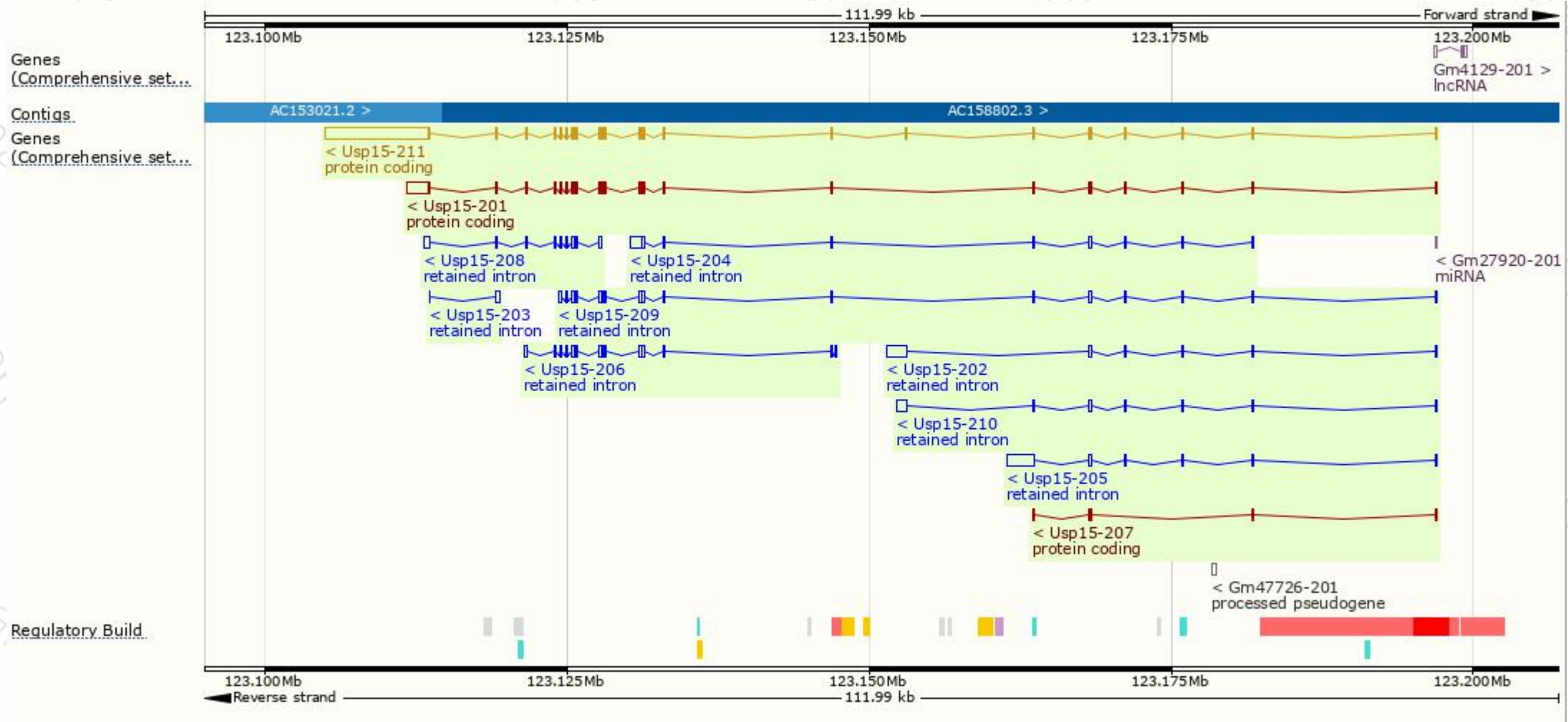
Official Symbol	Usp15 provided by MGI
Official Full Name	ubiquitin specific peptidase 15 provided by MGI
Primary source	MGI:MGI:101857
See related	Ensembl:ENSMUSG00000020124
Gene type	protein coding
RefSeq status	REVIEWED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	Gcap18; AI327321; 4921514G19Rik; E430033I05Rik
Summary	The protein encoded by this gene is a member of the large ubiquitin specific protease (Usp) family of proteins. These proteins are known to cleave ubiquitin, and contain a conserved cysteine residue (Cys box) and two conserved histidine residues (His box) that are thought to form part of the active site of the protease. This protein has been shown to cleave both the ubiquitin-proline and the ubiquitin-methionine bonds in vitro. This protein is thought to regulate many cellular processes through its deubiquitination activity, including the transforming growth factor beta (TGF-beta) pathway. Cardiac-specific overexpression of the human ortholog of this gene in mice causes enlargement of the heart that is more pronounced in the atrium than in the ventricle. This gene has two pseudogenes on chromosome 14. Alternative splicing results in multiple transcript variants that encode multiple protein isoforms.[provided by RefSeq, Aug 2014]
Expression	Ubiquitous expression in testis adult (RPKM 9.0), placenta adult (RPKM 8.8) and 26 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

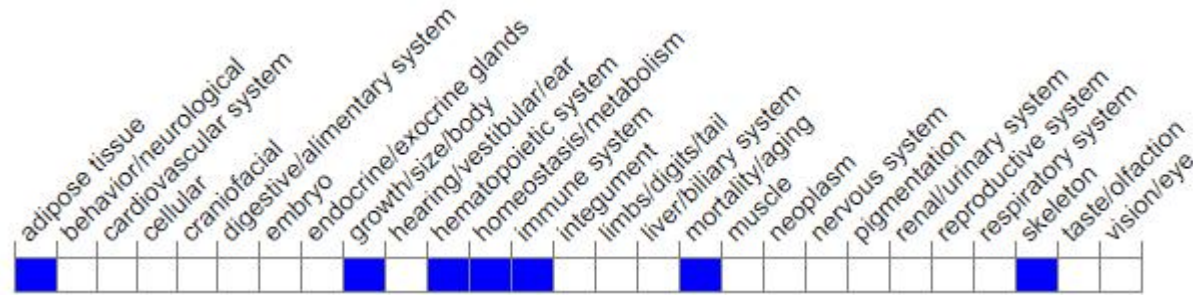
The gene has 11 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Usp15-211	ENSMUST00000220377.1	11525	981aa	Protein coding	CCDS24217	Q8R5H1	TSL:1 GENCODE basic APPRIS P2
Usp15-201	ENSMUST0000020334.8	4666	952aa	Protein coding	-	Q8R5H1	TSL:1 GENCODE basic APPRIS ALT1
Usp15-207	ENSMUST00000219619.1	414	138aa	Protein coding	-	A0A1W2P8B7	CDS 5' and 3' incomplete TSL:3
Usp15-205	ENSMUST00000219010.1	2840	No protein	Retained intron	-	-	TSL:1
Usp15-209	ENSMUST00000219992.1	2603	No protein	Retained intron	-	-	TSL:2
Usp15-202	ENSMUST00000217985.1	2243	No protein	Retained intron	-	-	TSL:2
Usp15-206	ENSMUST00000219413.1	2074	No protein	Retained intron	-	-	TSL:2
Usp15-204	ENSMUST00000218079.1	2013	No protein	Retained intron	-	-	TSL:2
Usp15-208	ENSMUST00000219937.1	1587	No protein	Retained intron	-	-	TSL:2
Usp15-210	ENSMUST00000220284.1	1477	No protein	Retained intron	-	-	TSL:2
Usp15-203	ENSMUST00000218042.1	443	No protein	Retained intron	-	-	TSL:2

Genomic location distribution



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, Mice homozygous for a knock-out allele or ENU induced allele exhibit resistance to pathological neuroinflammation.

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

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