

# ***Tle2 Cas9-CKO Strategy***

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# Project Overview

**Project Name**

*Tle2*

**Project type**

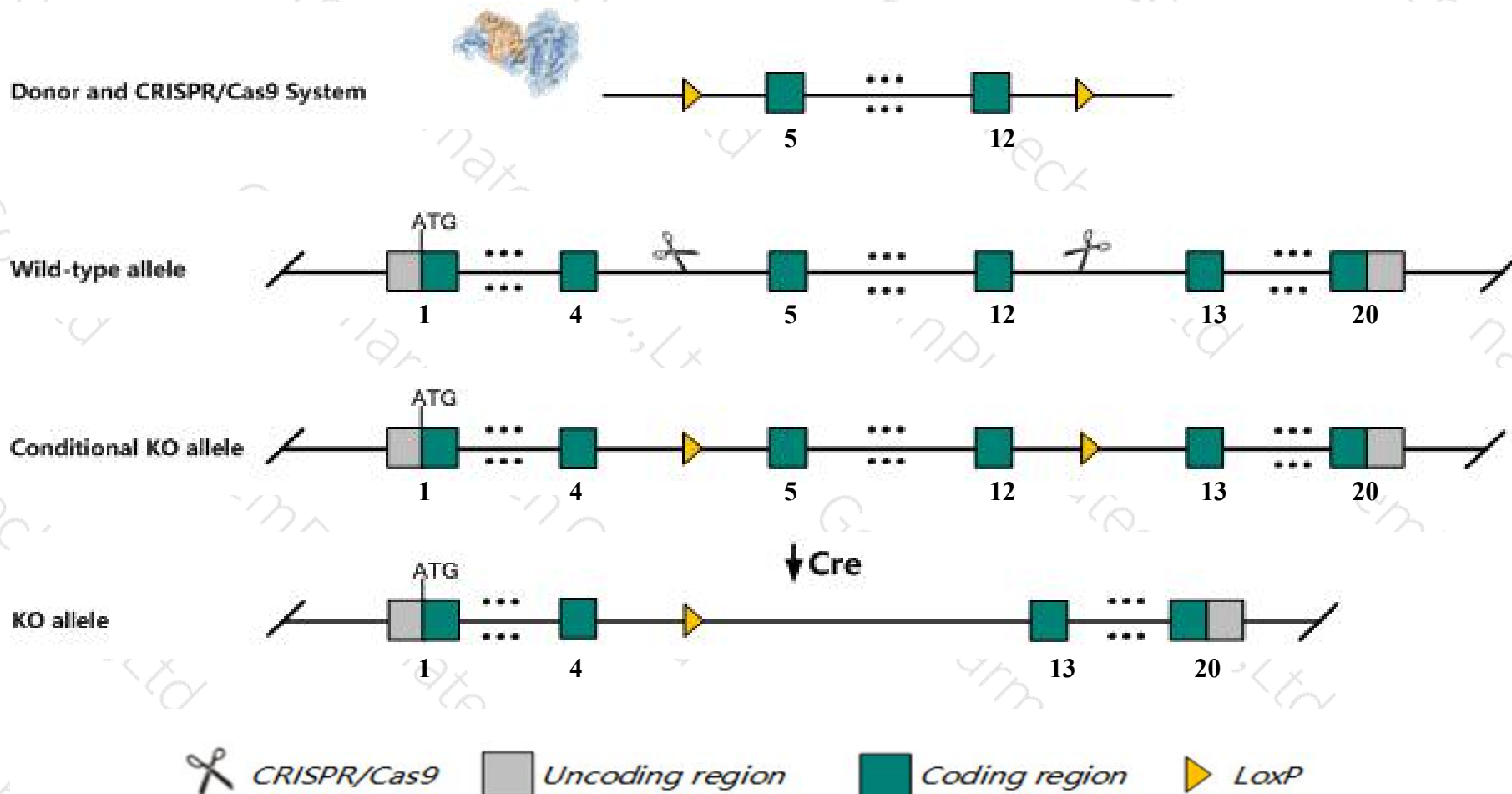
**Cas9-CKO**

**Strain background**

**C57BL/6JGpt**

# Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Tle2* gene. The schematic diagram is as follows:



# Technical routes

- The *Tle2* gene has 16 transcripts. According to the structure of *Tle2* gene, exon5-exon12 of *Tle2-213* (ENSMUST00000146358.7) transcript is recommended as the knockout region. The region contains 787bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Tle2* 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 effect on transcript *Tle2*-201&203&204 is unknown.
- Transcript *Tle2*-208&210 may not be affected.
- The floxed region is near to the N-terminal of *Gm15917* gene, this strategy may influence the regulatory function of the N-terminal of *Gm15917* gene.
- The N-terminal of *Tle2* gene will remain several amino acids, it may remain the partial function of *Tle2* gene.
- The *Tle2* 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 loxp insertion on gene transcription, RNA splicing and protein translation cannot be predicted at existing technological level.



# Gene information (NCBI)

## Tle2 transducin-like enhancer of split 2 [ *Mus musculus* (house mouse) ]

Gene ID: 21886, updated on 10-Oct-2019

### Summary

- Official Symbol** Tle2 provided by [MGI](#)
- Official Full Name** transducin-like enhancer of split 2 provided by [MGI](#)
- Primary source** [MGI:MGI:104635](#)
- See related** [Ensembl:ENSMUSG00000034771](#)
- 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** Grg2; mKIAA4188
- Expression** Broad expression in adrenal adult (RPKM 114.6), ovary adult (RPKM 111.1) and 21 other tissues [See more](#)
- Orthologs** [human](#) [all](#)

### Genomic context

**Location:** 10; 10 C1

See Tle2 in [Genome Data Viewer](#)

**Exon count:** 24

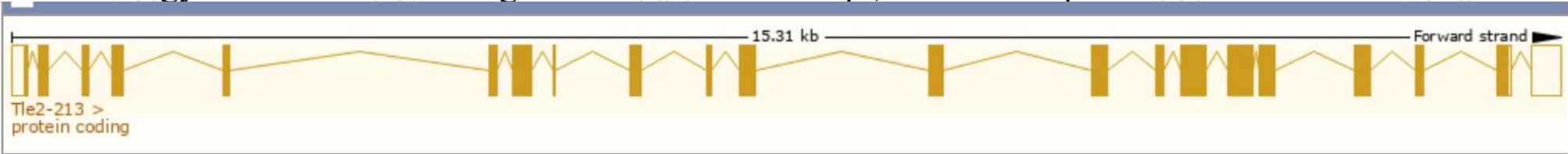
Annotation release	Status	Assembly	Chr	Location
<a href="#">108</a>	current	GRCm38.p6 ( <a href="#">GCF_000001635.26</a> )	10	NC_000076.6 (81574739..81592581)
Build 37.2	previous assembly	MGSCv37 ( <a href="#">GCF_000001635.18</a> )	10	NC_000076.5 (81038277..81053590)

# Transcript information (Ensembl)

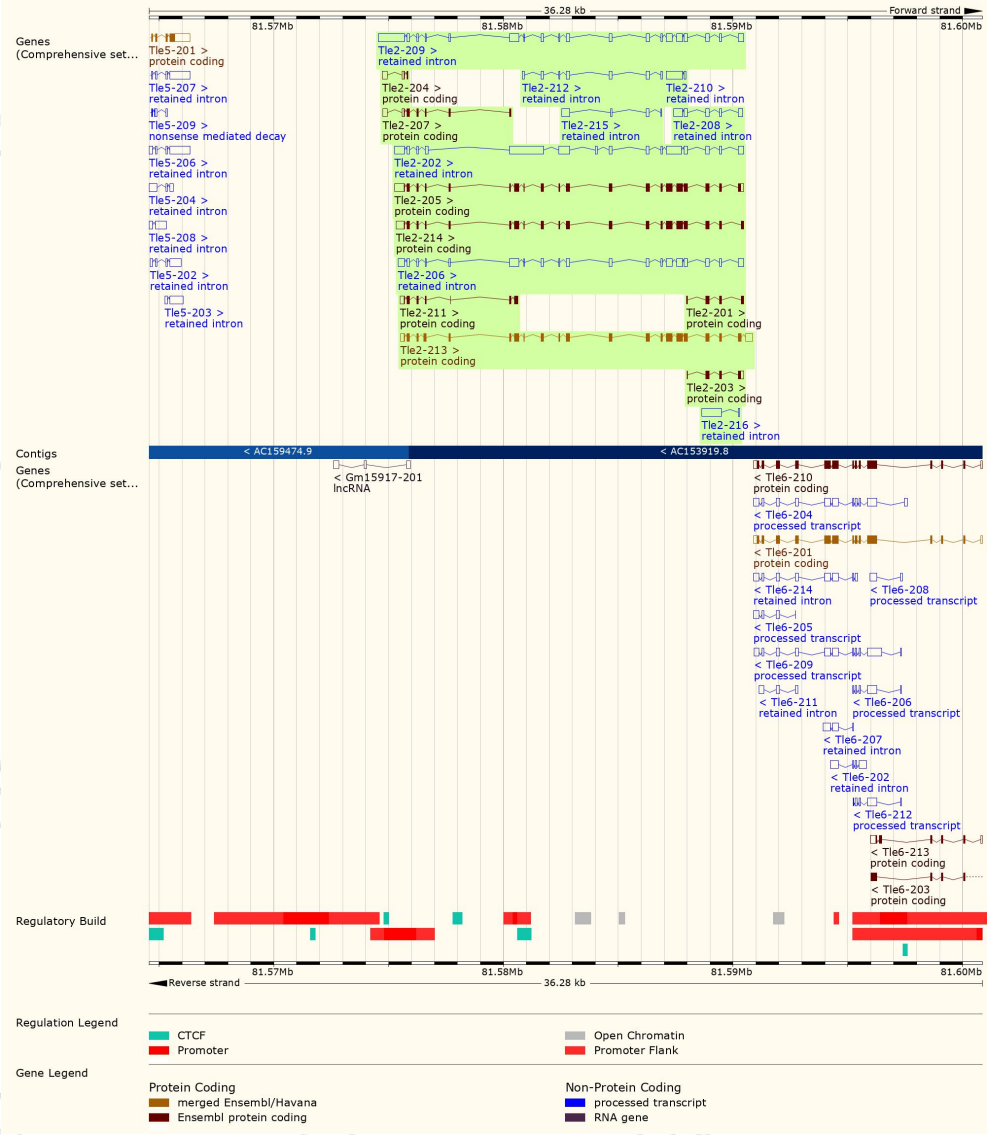
The gene has 16 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Tle2-213	<a href="#">ENSMUST00000146358.7</a>	2749	<a href="#">767aa</a>	Protein coding	<a href="#">CCDS24063</a>	<a href="#">Q9WVB2</a>	TSL:1 Gencode basic APPRIS P3
Tle2-205	<a href="#">ENSMUST00000135211.7</a>	2746	<a href="#">732aa</a>	Protein coding	<a href="#">CCDS56737</a>	<a href="#">Q3UN01</a>	TSL:1 Gencode basic APPRIS ALT2
Tle2-214	<a href="#">ENSMUST00000146916.7</a>	2546	<a href="#">736aa</a>	Protein coding	-	<a href="#">E9PV07</a>	CDS 3' incomplete TSL:2
Tle2-207	<a href="#">ENSMUST00000136341.7</a>	663	<a href="#">121aa</a>	Protein coding	-	<a href="#">D3Z2J7</a>	CDS 3' incomplete TSL:5
Tle2-211	<a href="#">ENSMUST00000143285.7</a>	630	<a href="#">153aa</a>	Protein coding	-	<a href="#">D3Z1A4</a>	CDS 3' incomplete TSL:5
Tle2-203	<a href="#">ENSMUST00000131411.1</a>	500	<a href="#">119aa</a>	Protein coding	-	<a href="#">F6YM15</a>	CDS 5' incomplete TSL:5
Tle2-201	<a href="#">ENSMUST00000124854.7</a>	402	<a href="#">134aa</a>	Protein coding	-	<a href="#">F6X5U5</a>	CDS 5' and 3' incomplete TSL:2
Tle2-204	<a href="#">ENSMUST00000131794.7</a>	357	<a href="#">17aa</a>	Protein coding	-	<a href="#">D3Z0X0</a>	CDS 3' incomplete TSL:3
Tle2-202	<a href="#">ENSMUST00000129798.7</a>	4388	No protein	Retained intron	-	-	TSL:5
Tle2-209	<a href="#">ENSMUST00000140433.7</a>	3625	No protein	Retained intron	-	-	TSL:2
Tle2-206	<a href="#">ENSMUST00000136254.7</a>	2735	No protein	Retained intron	-	-	TSL:2
Tle2-208	<a href="#">ENSMUST00000139135.1</a>	950	No protein	Retained intron	-	-	TSL:2
Tle2-216	<a href="#">ENSMUST00000153812.1</a>	933	No protein	Retained intron	-	-	TSL:5
Tle2-210	<a href="#">ENSMUST00000141913.1</a>	782	No protein	Retained intron	-	-	TSL:2
Tle2-212	<a href="#">ENSMUST00000145878.1</a>	757	No protein	Retained intron	-	-	TSL:5
Tle2-215	<a href="#">ENSMUST00000151470.1</a>	578	No protein	Retained intron	-	-	TSL:3

The strategy is based on the design of *Tle2-213* 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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