Mtor Cas9-KO Strategy

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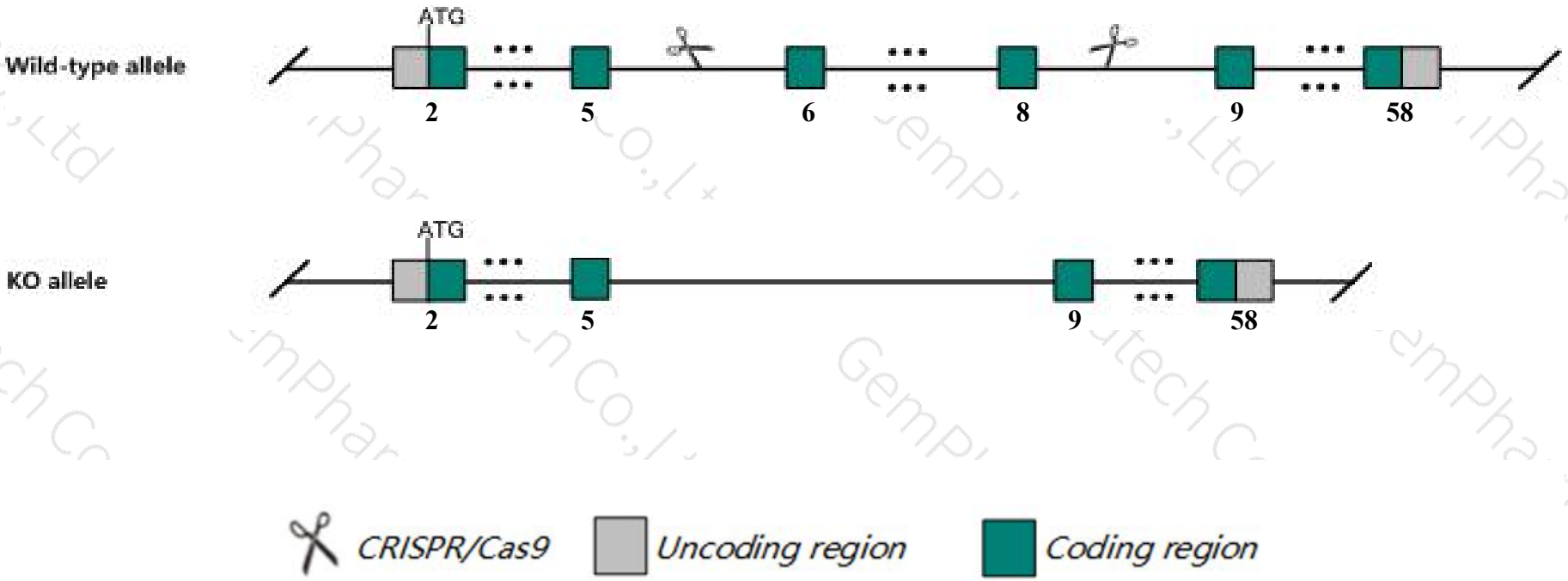
Design Date: 2019-7-24

Project Overview

Project Name	***Mtor***
Project type	**Cas9-KO**
Strain background	**C57BL/6JGpt**

Knockout strategy

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



Technical routes

➢ The *Mtor* gene has 4 transcripts. According to the structure of *Mtor* gene, exon6-exon8 of *Mtor-202* (ENSMUST00000103221.9) transcript is recommended as the knockout region.The region contains 520bp coding sequence. Knock out the region will result in disruption of protein function.

➢ In this project we use CRISPR/Cas9 technology to modify *Mtor* gene. The brief process is as follows: CRISPR/Cas9 system v

Notice

- According to the existing MGI data,Mice homozygous for targeted, gene trap and ENU-induced null alleles exhibit embryonic lethality by E12.5 with abnormal embryogenesis. Mice homozygous for the ENU mutation further exhibit abnormal brain development.

- Transcripts 201, 203 and 204 affect the unknown.

- The *Mtor* gene is located on the Chr4. 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）

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Mtor mechanistic target of rapamycin kinase [Mus musculus (house mouse)]

Gene ID: 56717, updated on 9-Apr-2019

Summary

Official Symbol	Mtor provided by MGI
Official Full Name	mechanistic target of rapamycin kinase provided by MGI
Primary source	MGI:MGI:1928394
See related	Ensembl:ENSMUSG00000028991
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	2610315D21Rik, AI327068, FRAP, FRAP2, Frap1, RAFT1, RAPT1, flat
Expression	Ubiquitous expression in testis adult (RPKM 23.0), kidney adult (RPKM 12.8) and 28 other tissues See more
Orthologs	human all

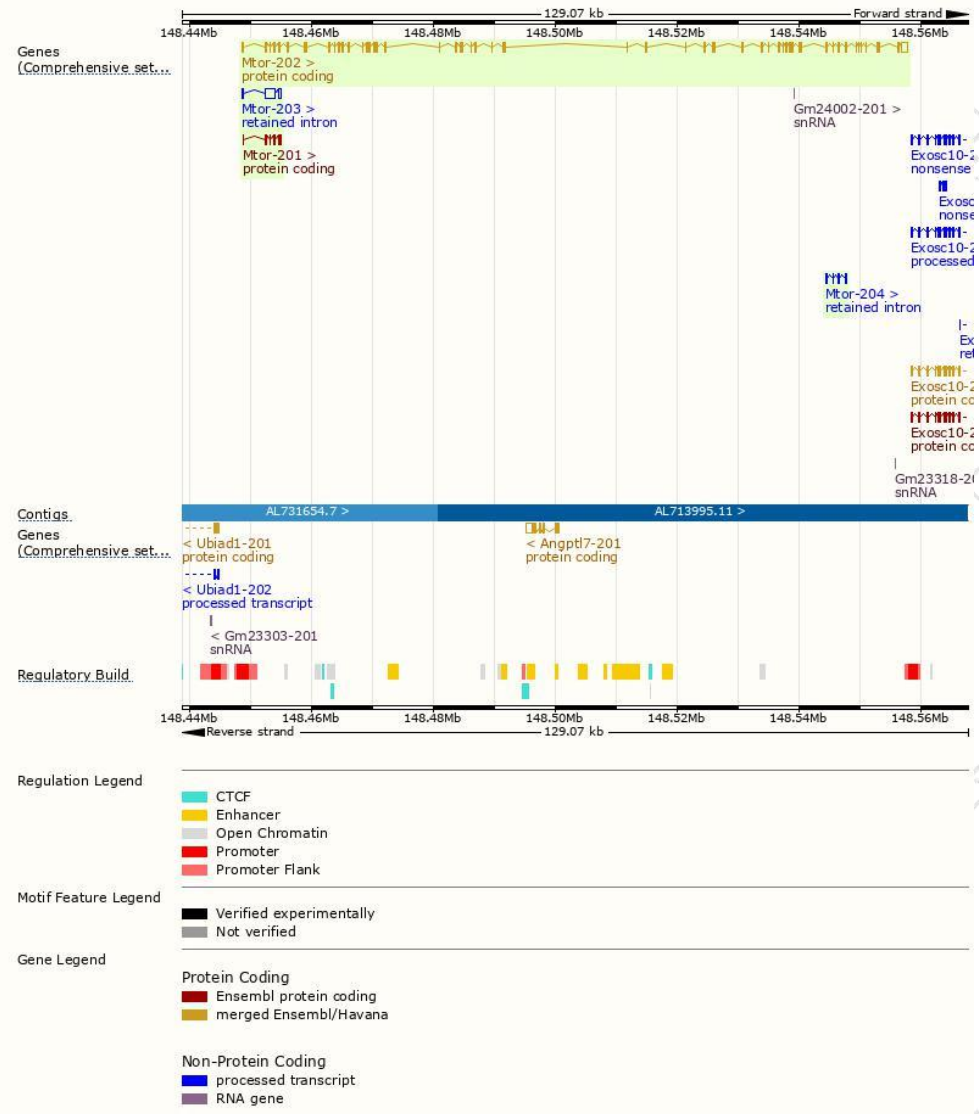
Transcript information（Ensembl）

The gene has 4 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Mtor-202	ENSMUST00000103221.9	8564	2549aa	Protein coding	CCDS18937	Q9JLN9	TSL:1 GENCODE basic APPRIS P1
Mtor-201	ENSMUST00000057580.7	1003	256aa	Protein coding	-	Q9JLN9	TSL:1 GENCODE basic
Mtor-203	ENSMUST00000123566.7	2229	No protein	Retained intron	-	-	TSL:1
Mtor-204	ENSMUST00000129715.1	598	No protein	Retained intron	-	-	TSL:3

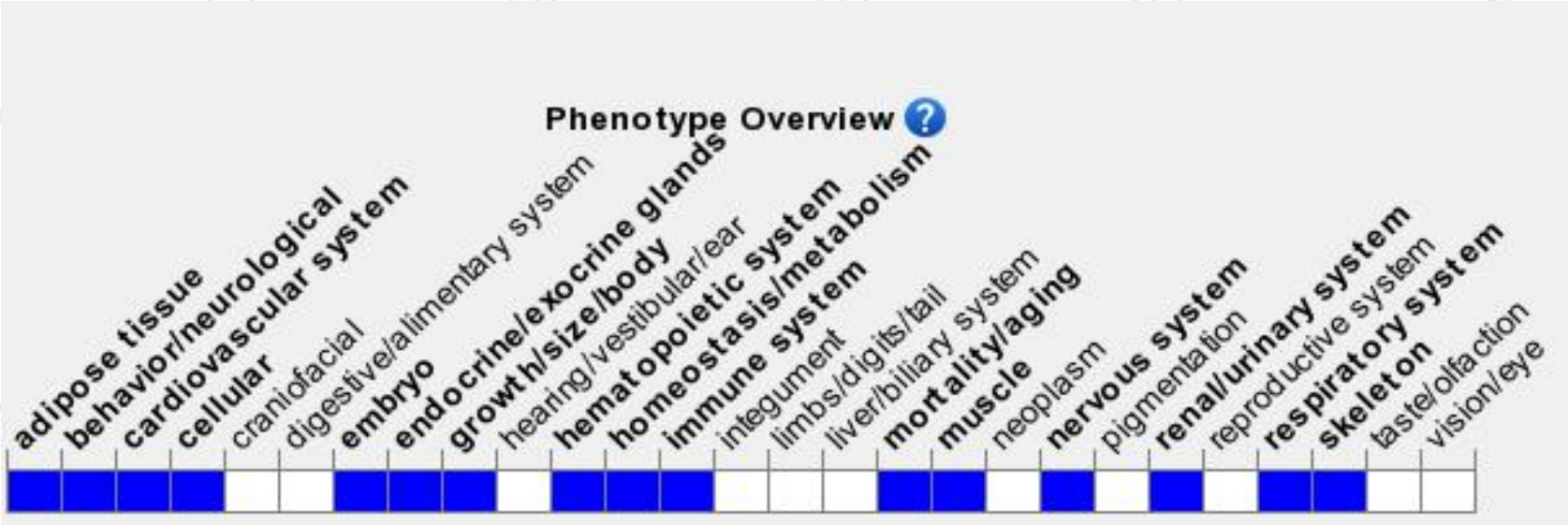
The strategy is based on the design of *Mtor-202* transcript,The transcription is shown below

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/).

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

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