

Rptor Cas9-KO Strategy

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Project Overview

Project Name

Rptor

Project type

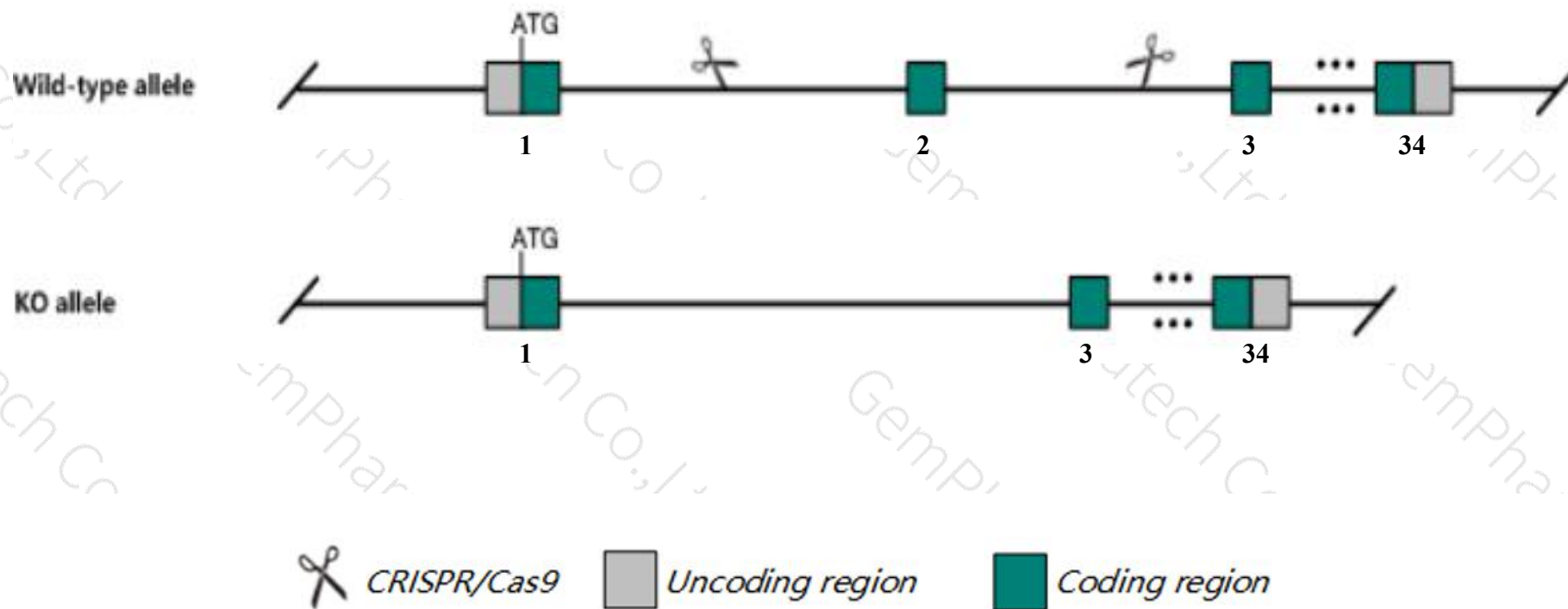
Cas9-KO

Strain background

C57BL/6JGpt

Knockout strategy

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



- The *Rptor* gene has 12 transcripts. According to the structure of *Rptor* gene, exon2 of *Rptor-201* (ENSMUST00000026671.12) transcript is recommended as the knockout region. The region contains 103bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Rptor* gene. The brief process is as follows: CRISPR/Cas9 system v

- According to the existing MGI data, homozygous mutation of this gene results in lethality prior to somitogenesis. mice homozygous for a conditional allele activated in dendritic cells exhibit increased susceptibility to induced colitis and expansion of certain populations of dendritic cells.
- The *Rptor* 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 the gene knockout on gene transcription, RNA splicing and protein translation cannot be predicted at the existing technology level.

Gene information (NCBI)

Rptor regulatory associated protein of MTOR, complex 1 [Mus musculus (house mouse)]

Gene ID: 74370, updated on 9-Apr-2019

Summary



Official Symbol Rptor provided by [MGI](#)

Official Full Name regulatory associated protein of MTOR, complex 1 provided by [MGI](#)

Primary source [MGI:MGI:1921620](#)

See related [Ensembl:ENSMUSG00000025583](#)

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 4932417H02Rik, Rap, Raptor, mKIAA1303

Summary This gene encodes a subunit of mammalian target of rapamycin complex 1 (mTORC1), a component of the mTOR signaling pathway, which regulates cell growth in response to nutrient and energy levels. The encoded protein may regulate the assembly, localization, and substrate binding of the mTORC1 complex. Homozygous knockout mice for this gene exhibit embryonic lethality. Alternative splicing results in multiple transcript variants. [provided by RefSeq, Apr 2015]

Expression Ubiquitous expression in adrenal adult (RPKM 14.6), thymus adult (RPKM 13.0) and 28 other tissues [See more](#)

Orthologs [human](#) [all](#)

Transcript information (Ensembl)

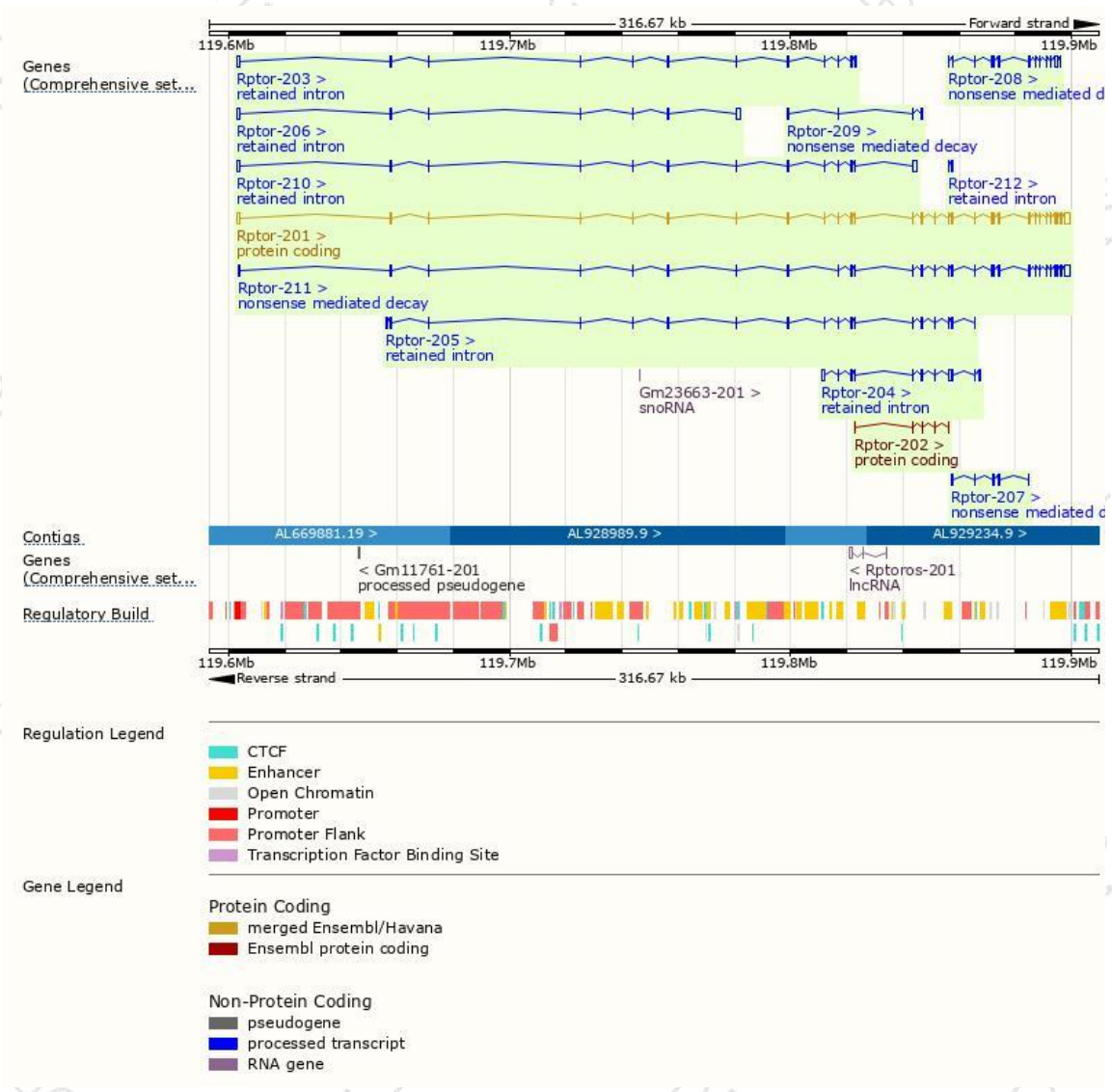
The gene has 12 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Rptor-201	ENSMUST00000026671.12	6594	1335aa	Protein coding	CCDS25720	A2ACM0	TSL:1 GENCODE basic APPRIS P1
Rptor-202	ENSMUST00000124401.1	515	171aa	Protein coding	-	F7BQS0	5' and 3' truncations in transcript evidence prevent annotation of the start and the end of the CDS. CDS 5' and 3' incomplete TSL:5
Rptor-211	ENSMUST00000147781.7	6138	387aa	Nonsense mediated decay	-	E9PXZ5	TSL:1
Rptor-208	ENSMUST00000136662.7	2355	264aa	Nonsense mediated decay	-	F7CN67	CDS 5' incomplete TSL:2
Rptor-209	ENSMUST00000139728.7	688	89aa	Nonsense mediated decay	-	F6U5L3	CDS 5' incomplete TSL:3
Rptor-207	ENSMUST00000131217.1	627	102aa	Nonsense mediated decay	-	F7B6I3	CDS 5' incomplete TSL:5
Rptor-210	ENSMUST00000147772.7	3662	No protein	Retained intron	-	-	TSL:2
Rptor-206	ENSMUST00000130049.7	3384	No protein	Retained intron	-	-	TSL:2
Rptor-204	ENSMUST00000126802.1	3247	No protein	Retained intron	-	-	TSL:1
Rptor-205	ENSMUST00000127899.7	2805	No protein	Retained intron	-	-	TSL:2
Rptor-203	ENSMUST00000125583.7	2569	No protein	Retained intron	-	-	TSL:2
Rptor-212	ENSMUST00000148860.1	566	No protein	Retained intron	-	-	TSL:2

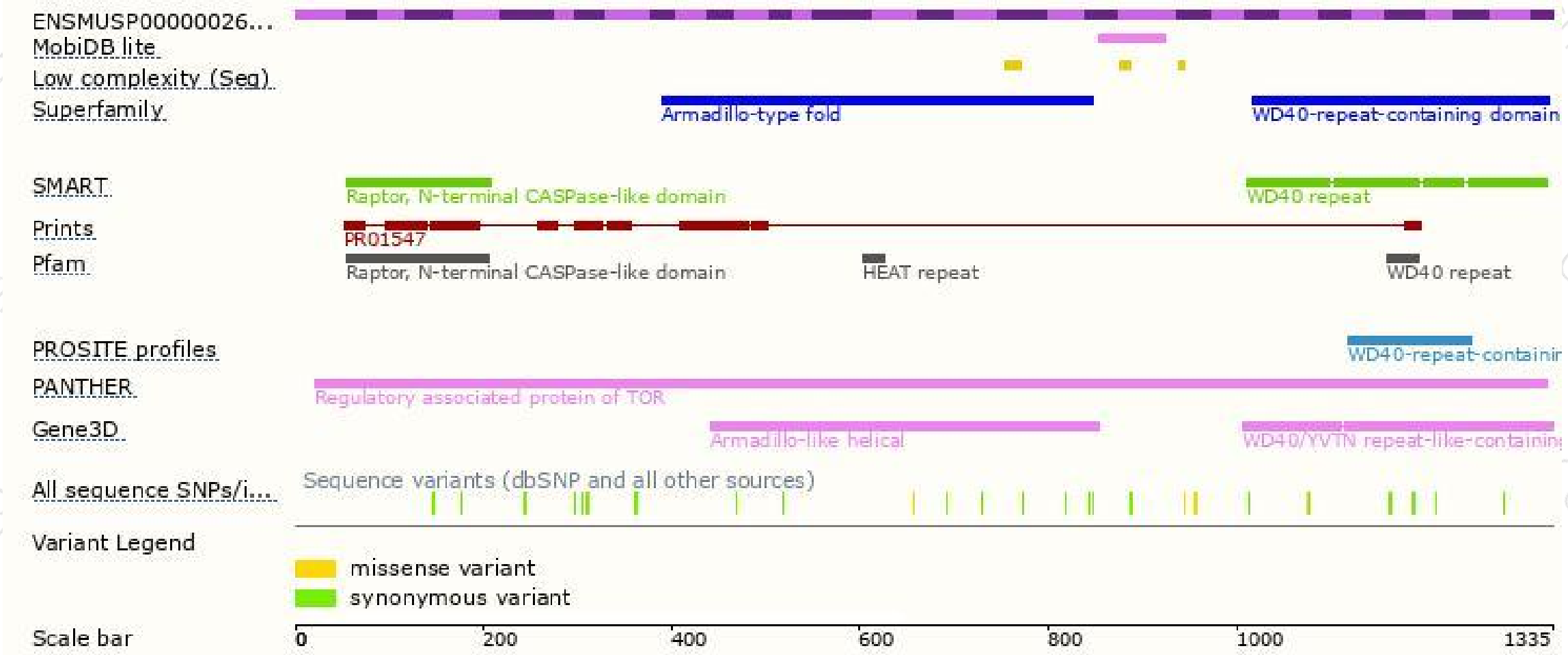
The strategy is based on the design of *Rptor-201* transcript,the transcription is shown below:



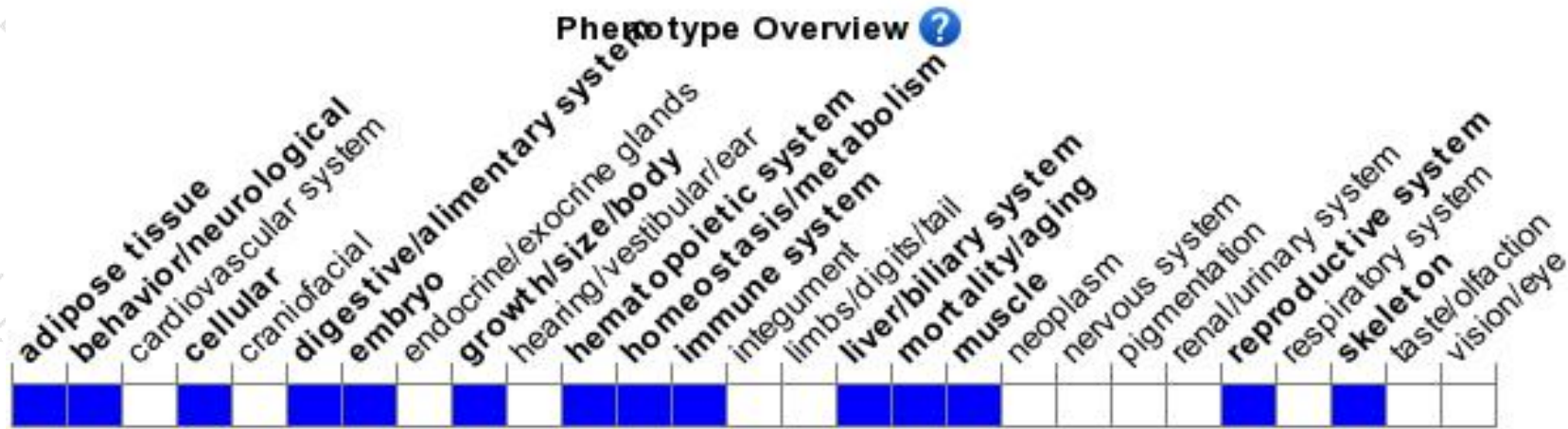
Genomic location distribution



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/>).

According to the existing MGI data, homozygous mutation of this gene results in lethality prior to somitogenesis. Mice homozygous for a conditional allele activated in dendritic cells exhibit increased susceptibility to induced colitis and expansion of certain populations of dendritic cells.

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

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