

Casr Cas9-KO Strategy

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Design Date: 2019-9-19
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Project Overview



Project Name

Casr

Project type

Cas9-KO

Strain background

C57BL/6JGpt

Knockout strategy

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



- The *Casr* gene has 4 transcripts. According to the structure of *Casr* gene, exon3-exon4 of *Casr-201* (ENSMUST00000063597.13) transcript is recommended as the knockout region. The region contains 1192bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Casr* gene. The brief process is as follows: CRISPR/Cas9 system w

- According to the existing MGI data, Homozygotes for a targeted null mutation exhibit high levels of serum calcium and parathyroid hormone, parathyroid hyperplasia, bone defects, reduced growth, and early death. Carriers have elevated serum calcium, magnesium, and parathyroid hormone levels.
- The *Casr* gene is located on the Chr16. 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)

Casr calcium-sensing receptor [Mus musculus (house mouse)]

Gene ID: 12374, updated on 31-Jan-2019

Summary

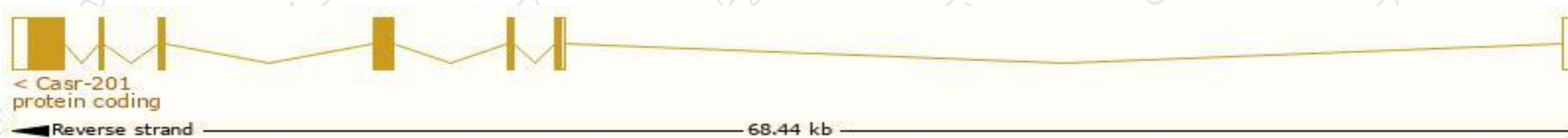
Official Symbol	Casr provided by MGI
Official Full Name	calcium-sensing receptor provided by MGI
Primary source	MGI:MGI:1351351
See related	Ensembl:ENSMUSG00000051980
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	CaR, Gprc2a
Expression	Biased expression in kidney adult (RPKM 6.6) and mammary gland adult (RPKM 0.5) See more
Orthologs	human all

Transcript information (Ensembl)

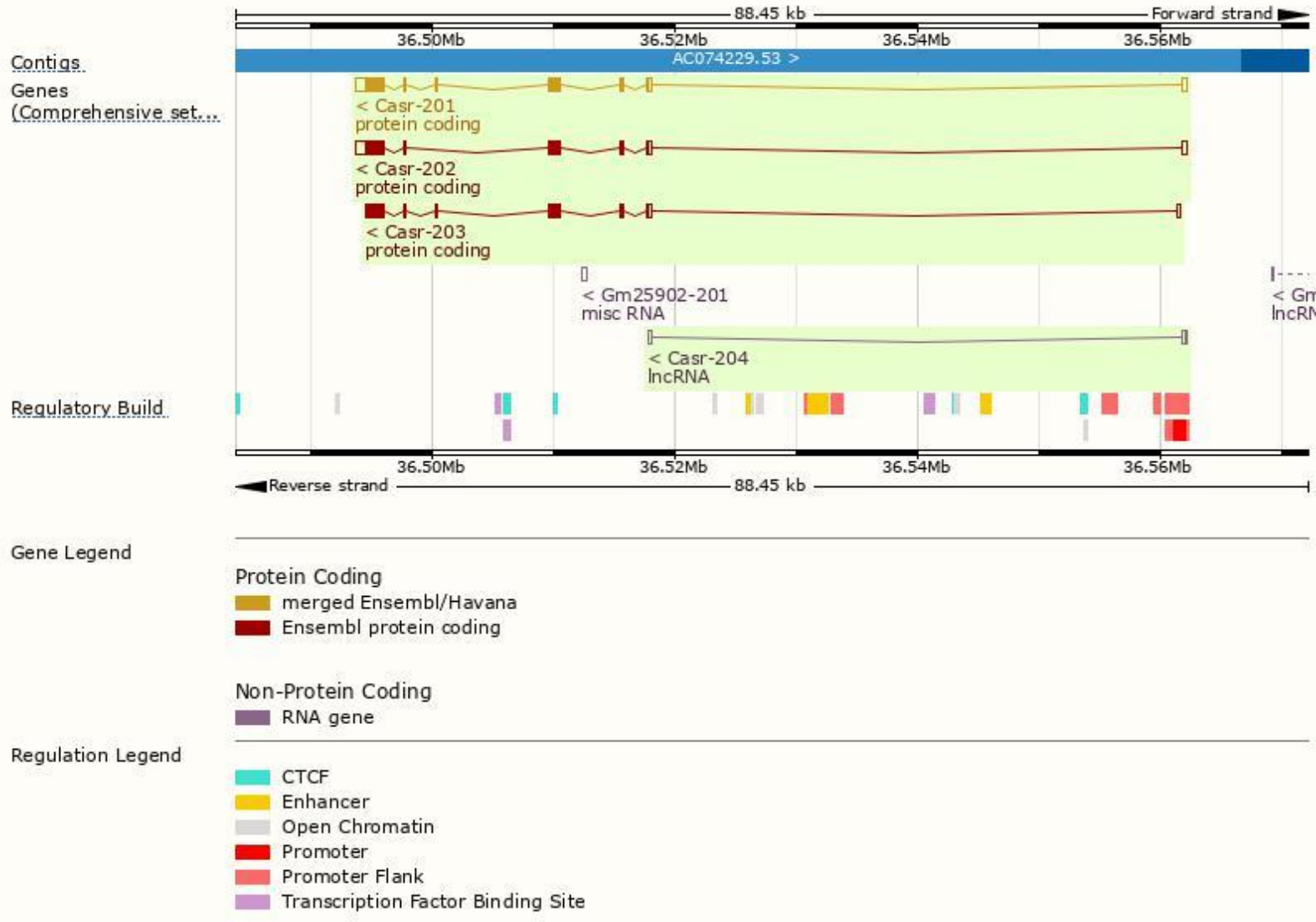
The gene has 4 transcripts, all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Casr-201	ENSMUST00000063597.13	4534	1079aa	Protein coding	CCDS28154	Q9QY96	TSL:1 GENCODE basic APPRIS P1
Casr-203	ENSMUST00000172826.1	3659	1079aa	Protein coding	CCDS28154	Q9QY96	TSL:5 GENCODE basic APPRIS P1
Casr-202	ENSMUST00000114847.8	4303	1002aa	Protein coding	-	Q9QY96	TSL:1 GENCODE basic
Casr-204	ENSMUST00000174750.1	400	No protein	lncRNA	-	-	TSL:3

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



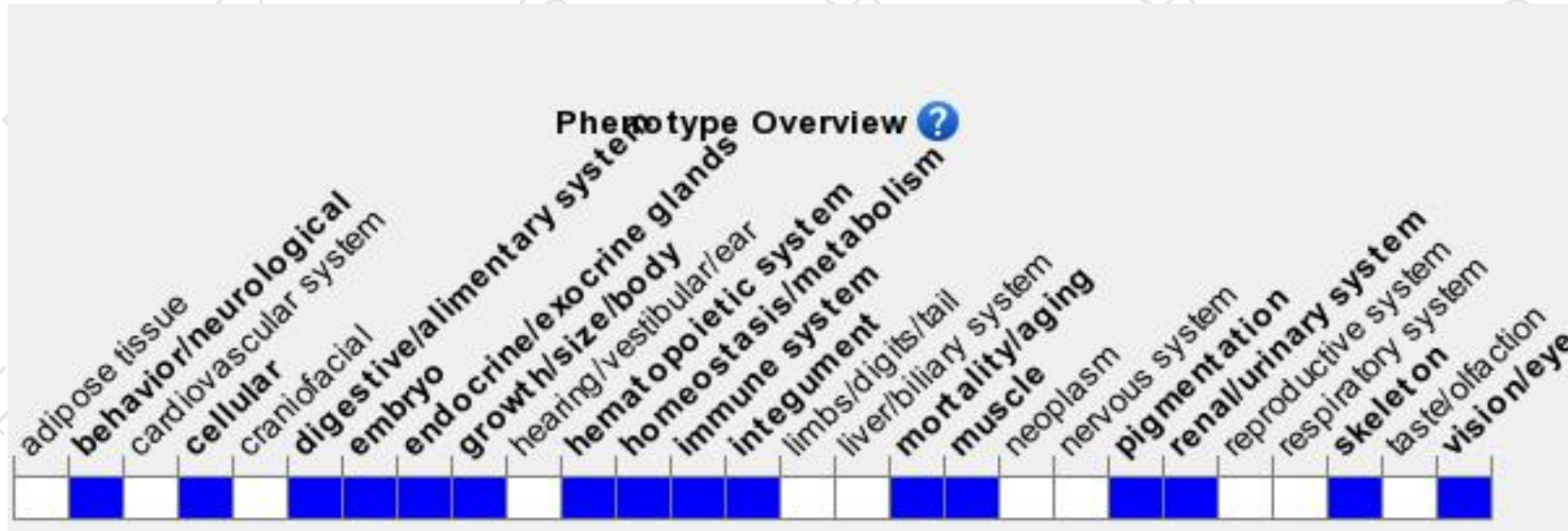
Genomic location distribution



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, Homozygotes for a targeted null mutation exhibit high levels of serum calcium and parathyroid hormone, parathyroid hyperplasia, bone defects, reduced growth, and early death. Carriers have elevated serum calcium, magnesium, and parathyroid hormone levels.

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

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