

Rtn2 Cas9-KO Strategy

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Reviewer :

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Project Overview

Project Name

Rtkn2

Project type

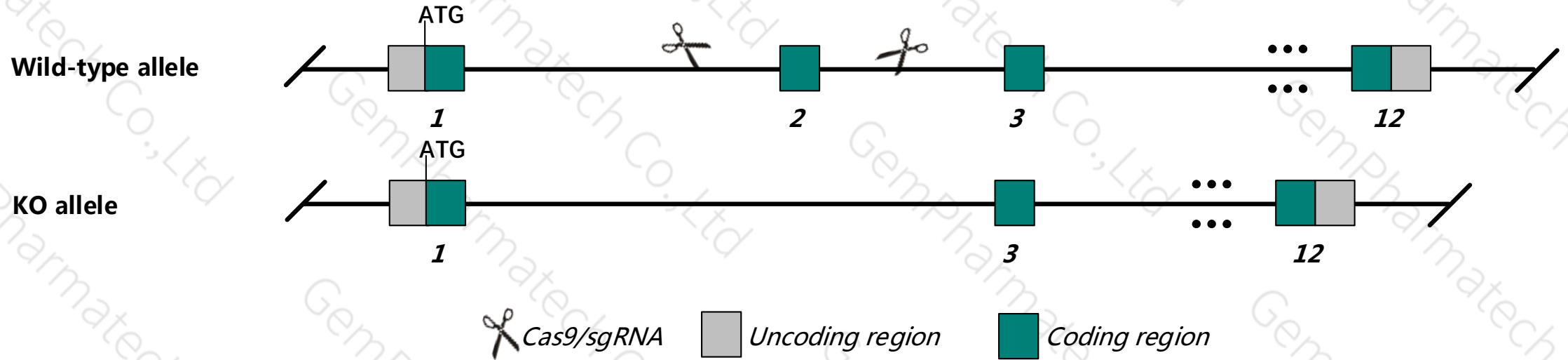
Cas9-KO

Strain background

C57BL/6JGpt

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Rtkn2* gene. The schematic diagram is as follows:



Technical routes

- The *Rtkn2* gene has 6 transcripts. According to the structure of *Rtkn2* gene, exon2 of *Rtkn2*-204 (ENSMUST00000118160.7) transcript is recommended as the knockout region. The region contains 206bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Rtkn2* gene. The brief process is as follows: sgRNA was transcribed in vitro. Cas9 and sgRNA 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 *Rtkn2* 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)

Rtkn2 rhotekin 2 [*Mus musculus* (house mouse)]

Gene ID: 170799, updated on 25-Aug-2020

Summary

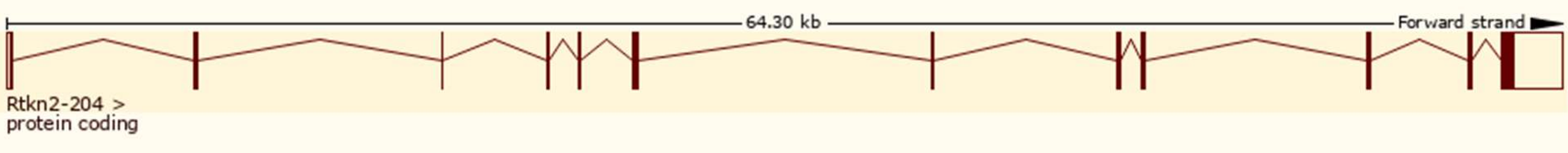
Official Symbol	Rtkn2 provided by MGI
Official Full Name	rhotekin 2 provided by MGI
Primary source	MGI:MGI:2158417
See related	Ensembl:ENSMUSG000000037846
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	Mbf; RTK; Plekh; Plekhk1; B130039D23Rik
Expression	Biased expression in lung adult (RPKM 8.1), CNS E11.5 (RPKM 1.4) and 4 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

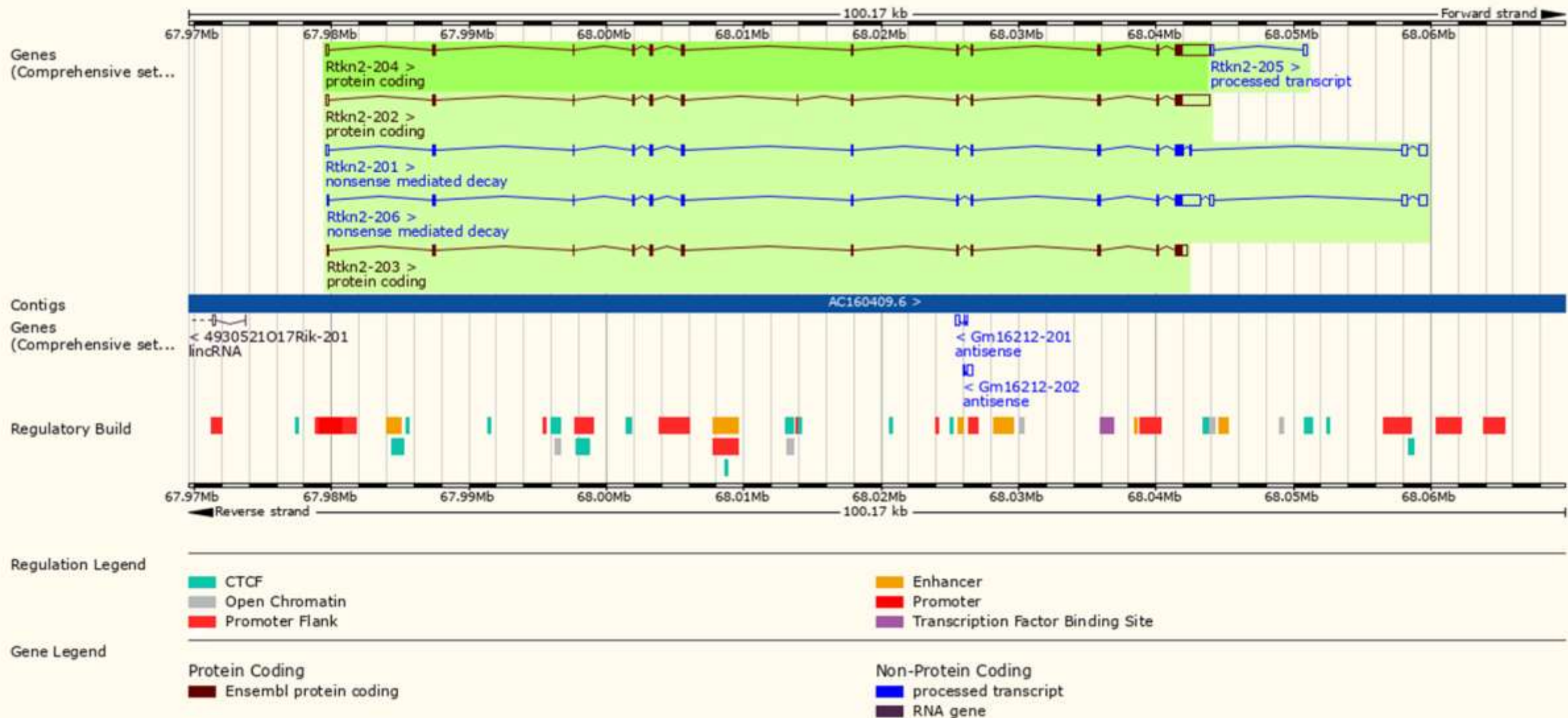
The gene has 6 transcripts, and all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Rtkn2-206	ENSMUST00000147556.7	4432	601aa	Nonsense mediated decay	-	Q14B46	TSL:1
Rtkn2-201	ENSMUST00000068994.13	3110	604aa	Nonsense mediated decay	-	Q14B46	TSL:1
Rtkn2-205	ENSMUST00000123147.1	546	No protein	Processed transcript	-	-	TSL:3
Rtkn2-204	ENSMUST00000118160.7	3970	604aa	Protein coding	-	Q14B46	TSL:1 Gencode basic APPRIS P5
Rtkn2-202	ENSMUST00000105437.7	3932	602aa	Protein coding	-	E9QP76	TSL:5 Gencode basic APPRIS ALT2
Rtkn2-203	ENSMUST00000117086.1	2246	601aa	Protein coding	-	Q14B46	TSL:1 Gencode basic APPRIS ALT2

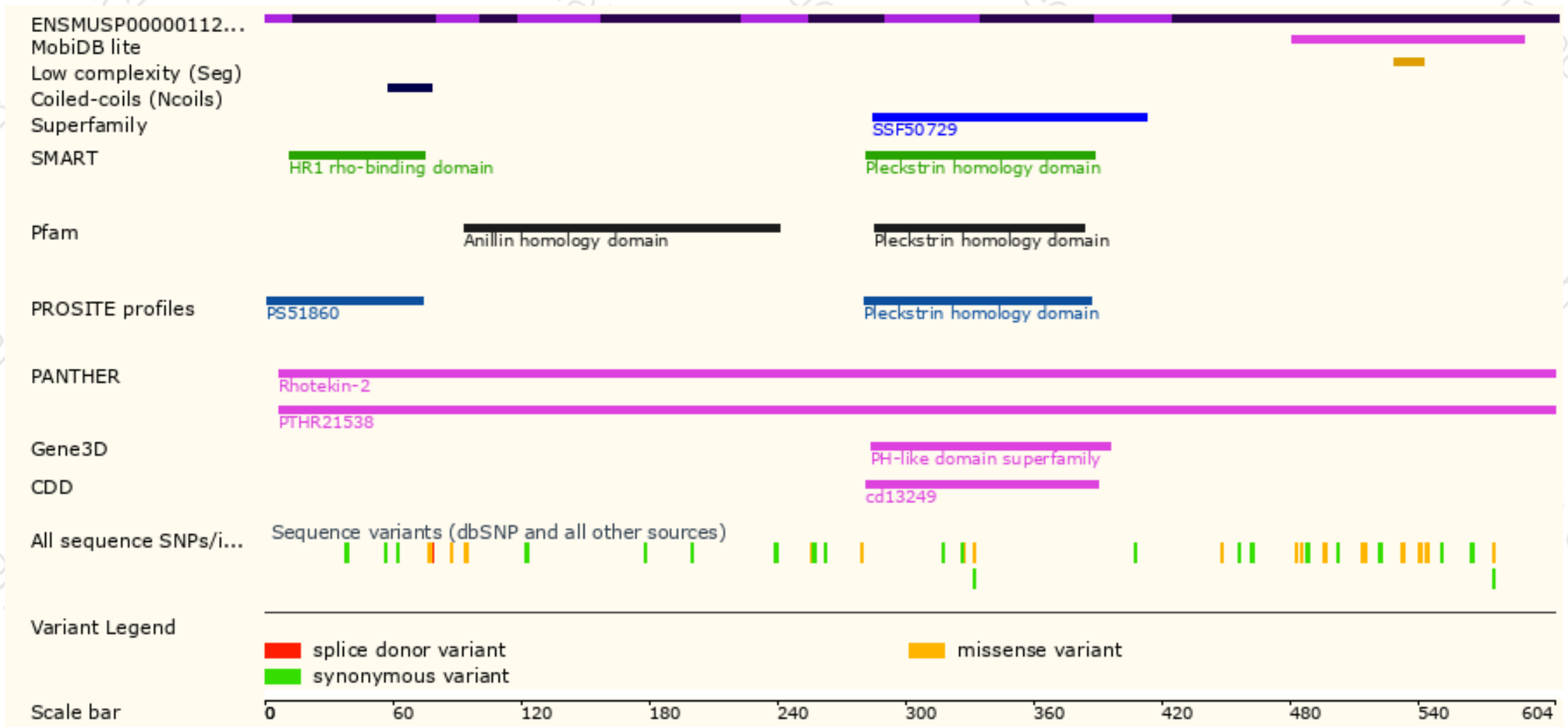
The strategy is based on the design of *Rtkn2-204* transcript, The transcription is shown below:



Genomic location (Ensembl)



Protein domain (Ensembl)



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