Trex2 Cas9-KO Strategy

Designer: Xueting Zhang

Reviewer: Daohua Xu

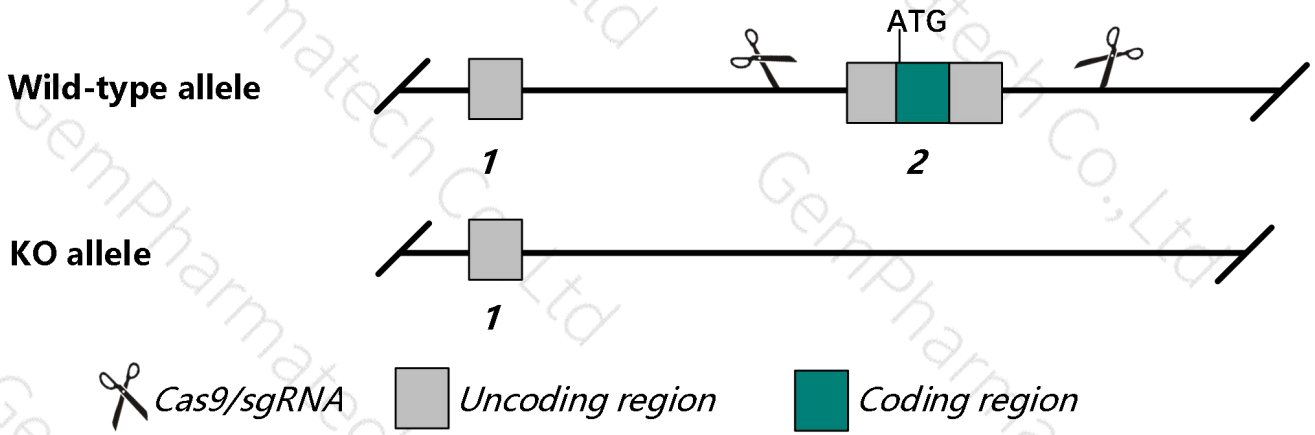
Design Date: 2020-6-18

Project Overview

Project Name	***Trex2***
Project type	**Cas9-KO**
Strain background	**C57BL/6JGpt**

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Trex2* gene. The schematic diagram is as follows:



Technical routes

➢ The *Trex2* gene has 1 transcript. According to the structure of *Trex2* gene, exon2 of *Trex2-201*(ENSMUST00000033738.7) transcript is recommended as the knockout region.The region contains all of the coding sequence.Knock out the region will result in disruption of protein function.

➢ In this project we use CRISPR/Cas9 technology to modify *Trex2* gene. The brief process is as follows: CRISPR/Cas9 system 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.

Notice

➢ According to the existing MGI data,mice homozygous for a knock-out allele exhibit increased susceptibility to DMBA- or DMBA plus TPA-induced skin tumors associated with decreased apoptosis in treated epidermis and keratinocytes.

➢ The *Trex2* gene is located on the ChrX. 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）

集萃药康 GemPharmatech

Trex2 three prime repair exonuclease 2 [Mus musculus (house mouse)]

Gene ID: 24102, updated on 13-Mar-2020

Summary

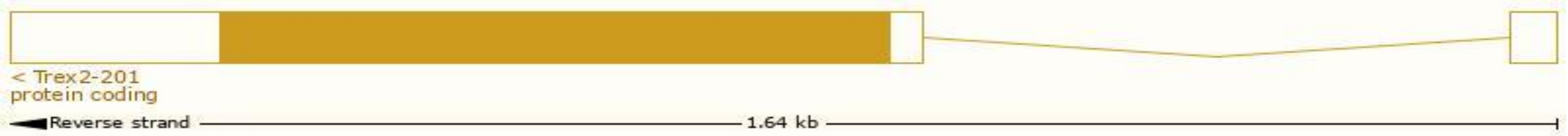
Official Symbol	Trex2 provided by MGI
Official Full Name	three prime repair exonuclease 2 provided byMGI
Primary source	MGI:MGI:1346343
See related	Ensembl:ENSMUSG00000031372
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Expression	Biased expression in stomach adult (RPKM 79.1) and lung adult (RPKM 22.1)See more
Orthologs	human all

Transcript information（Ensembl）

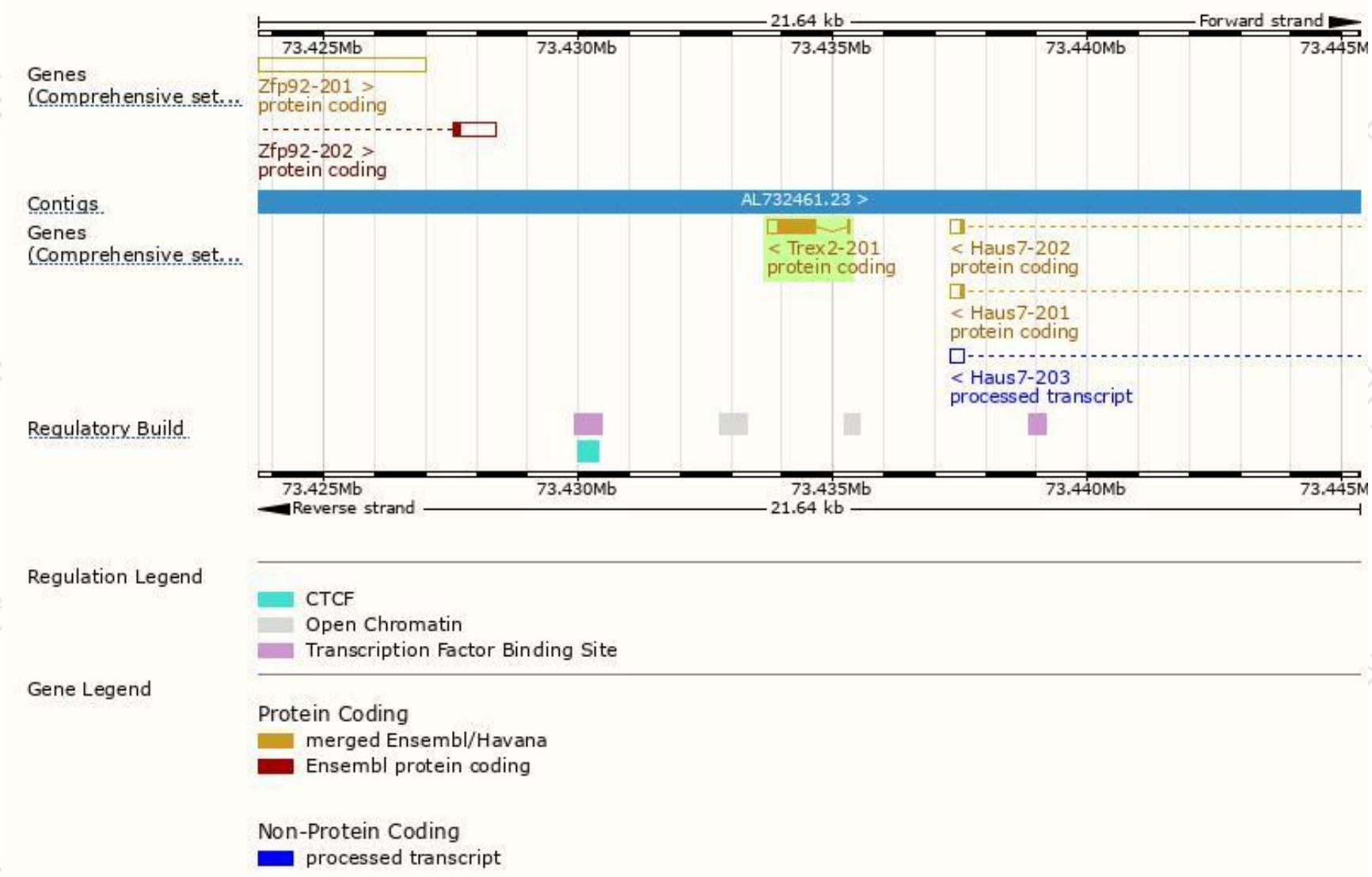
The gene has 1 transcript,and the transcript is shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Trex2-201	ENSMUST00000033738.7	1017	236aa	Protein coding	CCDS30201	Q3SXB3 Q9R1A9	TSL:1 GENCODE basic APPRIS P1

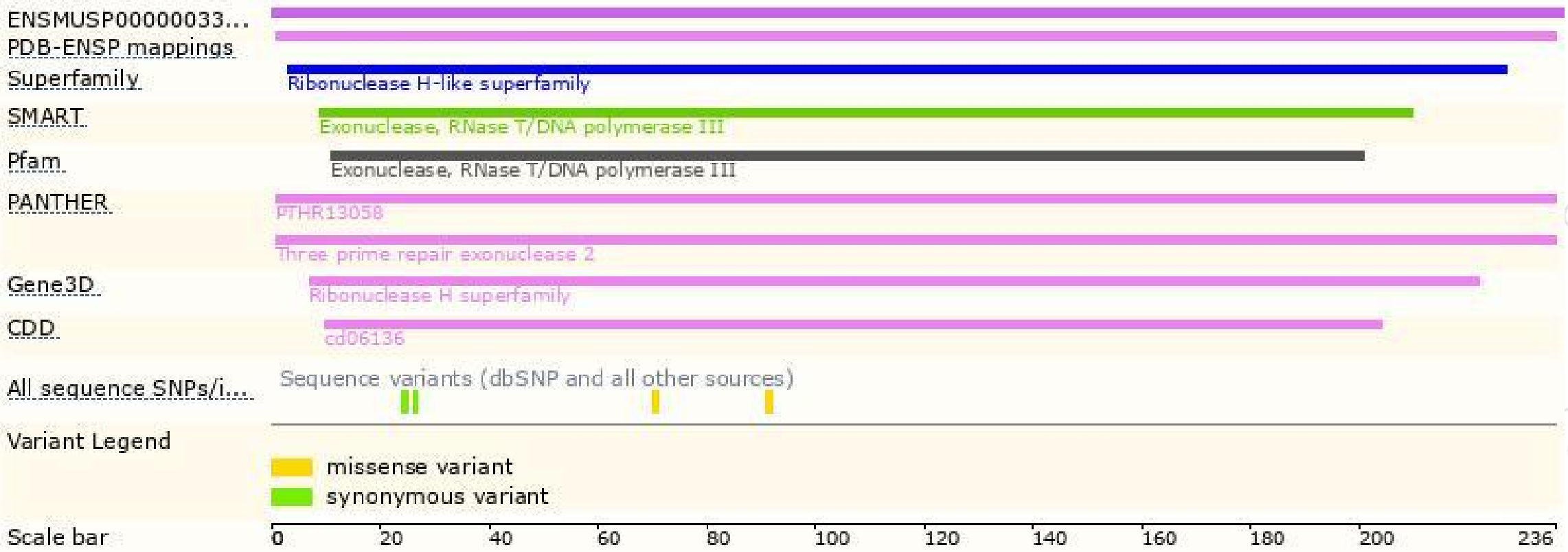
The strategy is based on the design of *Trex2-201* transcript,the transcription is shown below:



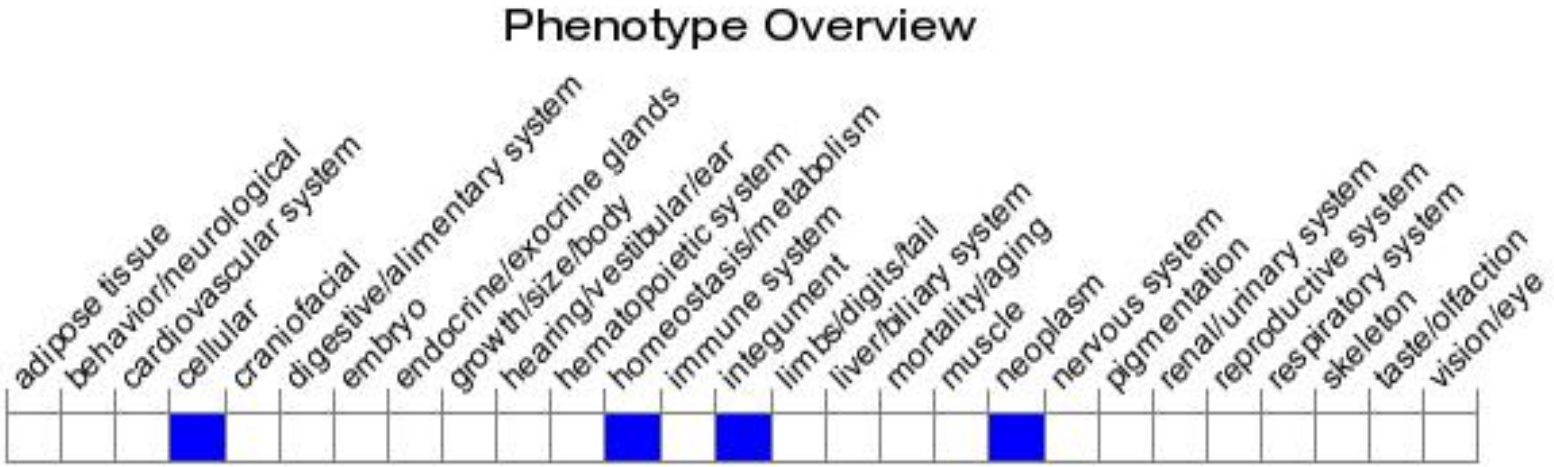
Genomic location distribution



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,mice homozygous for a knock-out allele exhibit increased susceptibility to DMBA- or DMBA plus TPA-induced skin tumors associated with decreased apoptosis in treated epidermis and keratinocytes.

集萃药康
GemPharmatech

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

Tel: 400-9660890

集萃药康生物科技
GemPharmatech Co.,Ltd