

Pex14 Cas9-CKO Strategy

Designer: Longyun Hu

Reviewer: Rui Xiong

Design Date: 2021-3-2

Project Overview

Project Name

Pex14

Project type

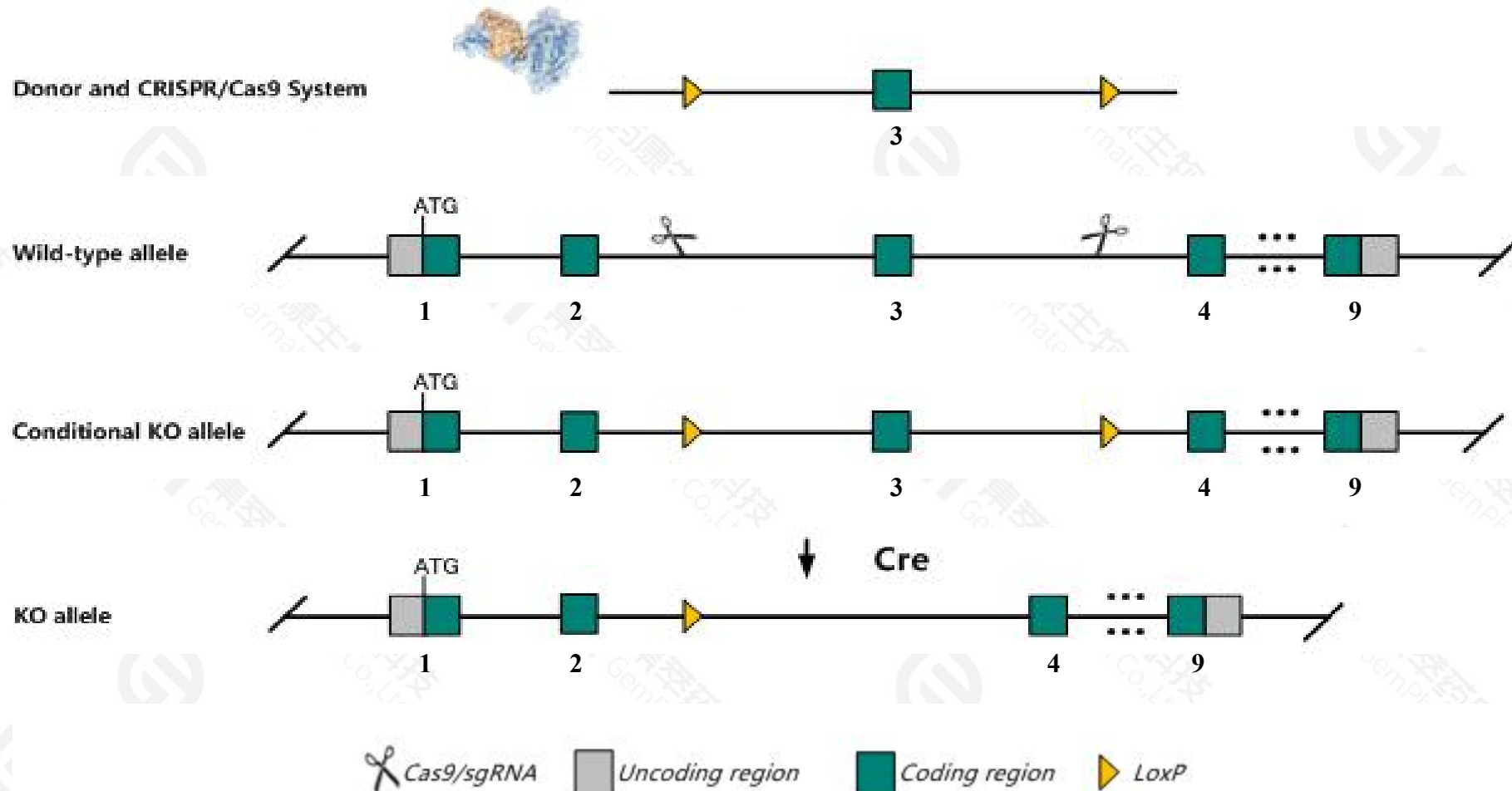
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Pex14* gene. The schematic diagram is as follows:



- The *Pex14* gene has 5 transcripts. According to the structure of *Pex14* gene, exon3 of *Pex14-201*(ENSMUST00000103217.10) transcript is recommended as the knockout region. The region contains 85bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Pex14* gene. The brief process is as follows: sgRNA was transcribed in vitro, donor vector was constructed. Cas9, sgRNA and Donor 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 flox mice was knocked out after mating with mice expressing Cre recombinase, resulting in the loss of function of the target gene in specific tissues and cell types.

- According to the existing MGI data, homozygous disruption of this locus results in embryonic lethality.
- The *Pex14* 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 loxp insertion on gene transcription, RNA splicing and protein translation cannot be predicted at existing technological level.

Gene information (NCBI)

Pex14 peroxisomal biogenesis factor 14 [Mus musculus (house mouse)]

Gene ID: 56273, updated on 13-Mar-2020

Summary



Official Symbol Pex14 provided by [MGI](#)

Official Full Name peroxisomal biogenesis factor 14 provided by [MGI](#)

Primary source [MGI:MGI:1927868](#)

See related [Ensembl:ENSMUSG00000028975](#)

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 Pex14p, R75137

Expression Ubiquitous expression in adrenal adult (RPKM 52.9), duodenum adult (RPKM 28.4) and 28 other tissues [See more](#)

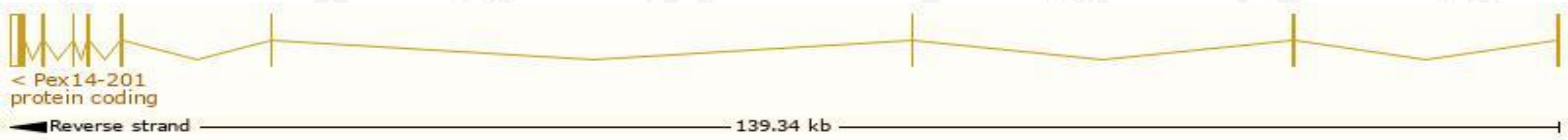
Orthologs [human](#) [all](#)

Transcript information (Ensembl)

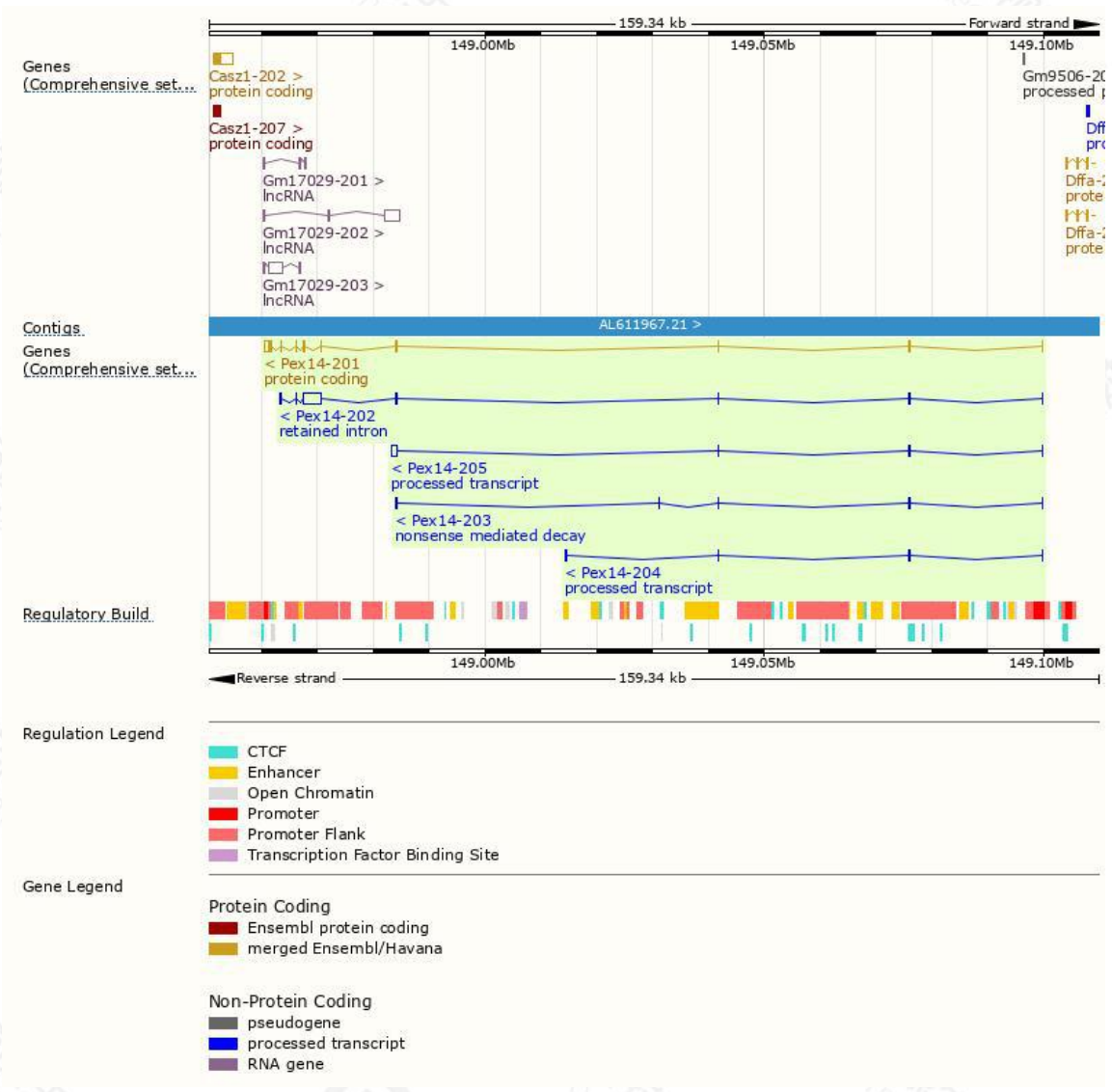
The gene has 5 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Pex14-201	ENSMUST00000103217.10	2006	376aa	Protein coding	CCDS18950	Q9R0A0	TSL:1 GENCODE basic APPRIS P1
Pex14-203	ENSMUST00000134747.1	358	78aa	Nonsense mediated decay	-	D6RH82	TSL:3
Pex14-205	ENSMUST00000154860.7	989	No protein	Processed transcript	-	-	TSL:2
Pex14-204	ENSMUST00000148203.1	514	No protein	Processed transcript	-	-	TSL:3
Pex14-202	ENSMUST00000128067.7	3819	No protein	Retained intron	-	-	TSL:1

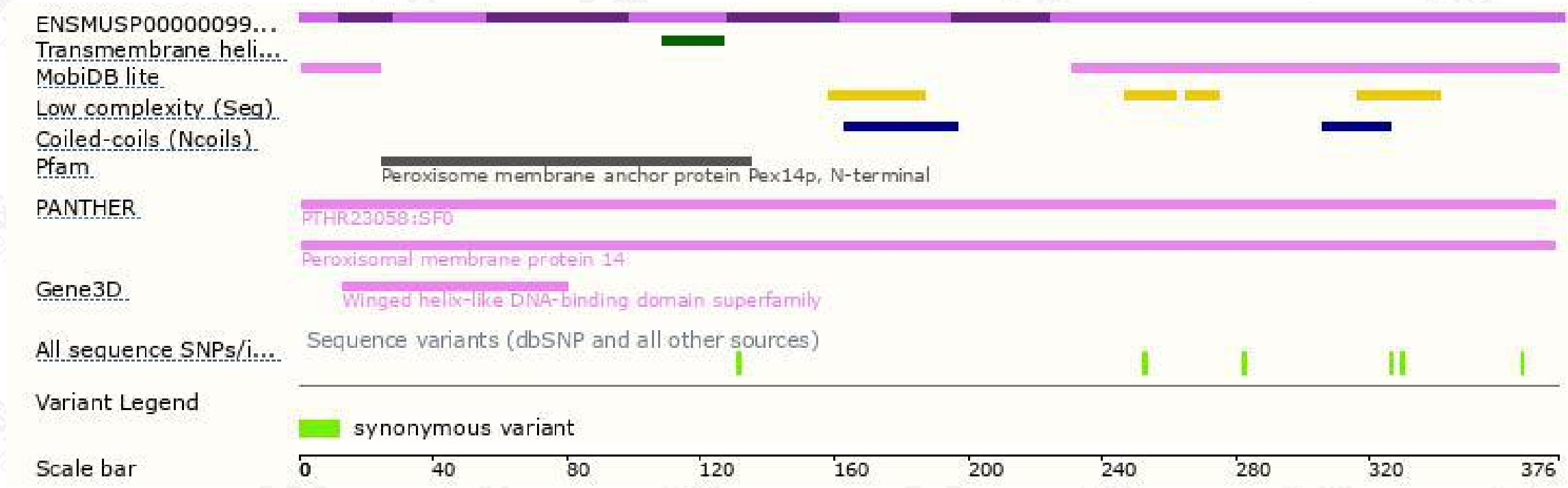
The strategy is based on the design of *Pex14-201* transcript,the transcription is shown below:



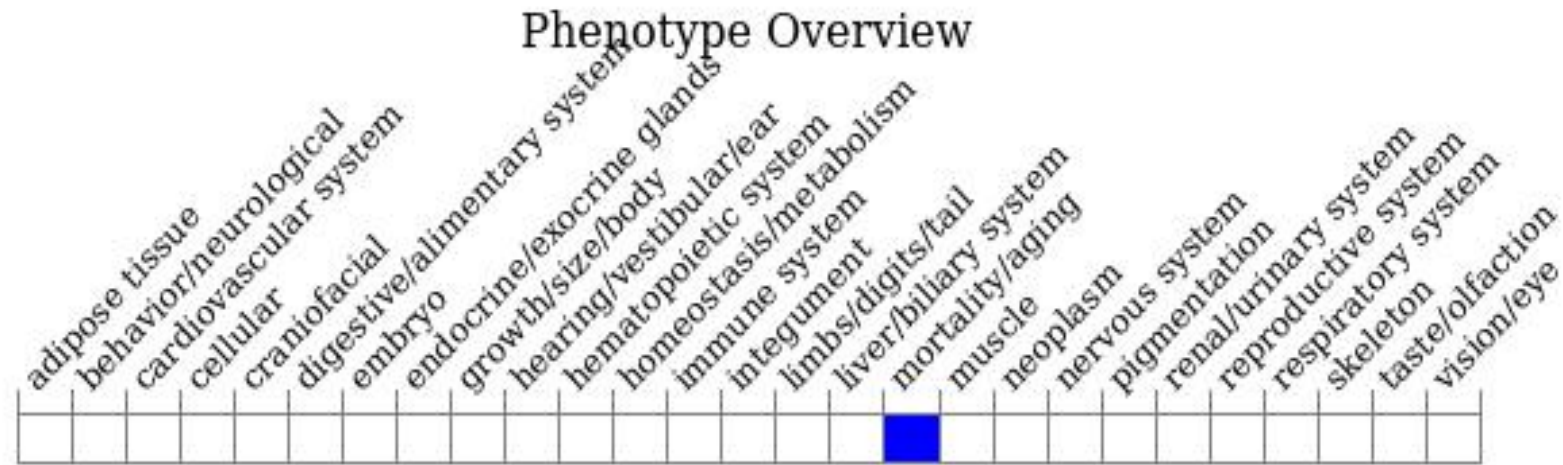
Genomic location distribution



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 disruption of this locus results in embryonic lethality.

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

Tel: 025-5864 1534

