

***Krt14* Cas9-CKO Strategy**

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Project Overview

Project Name

Krt14

Project type

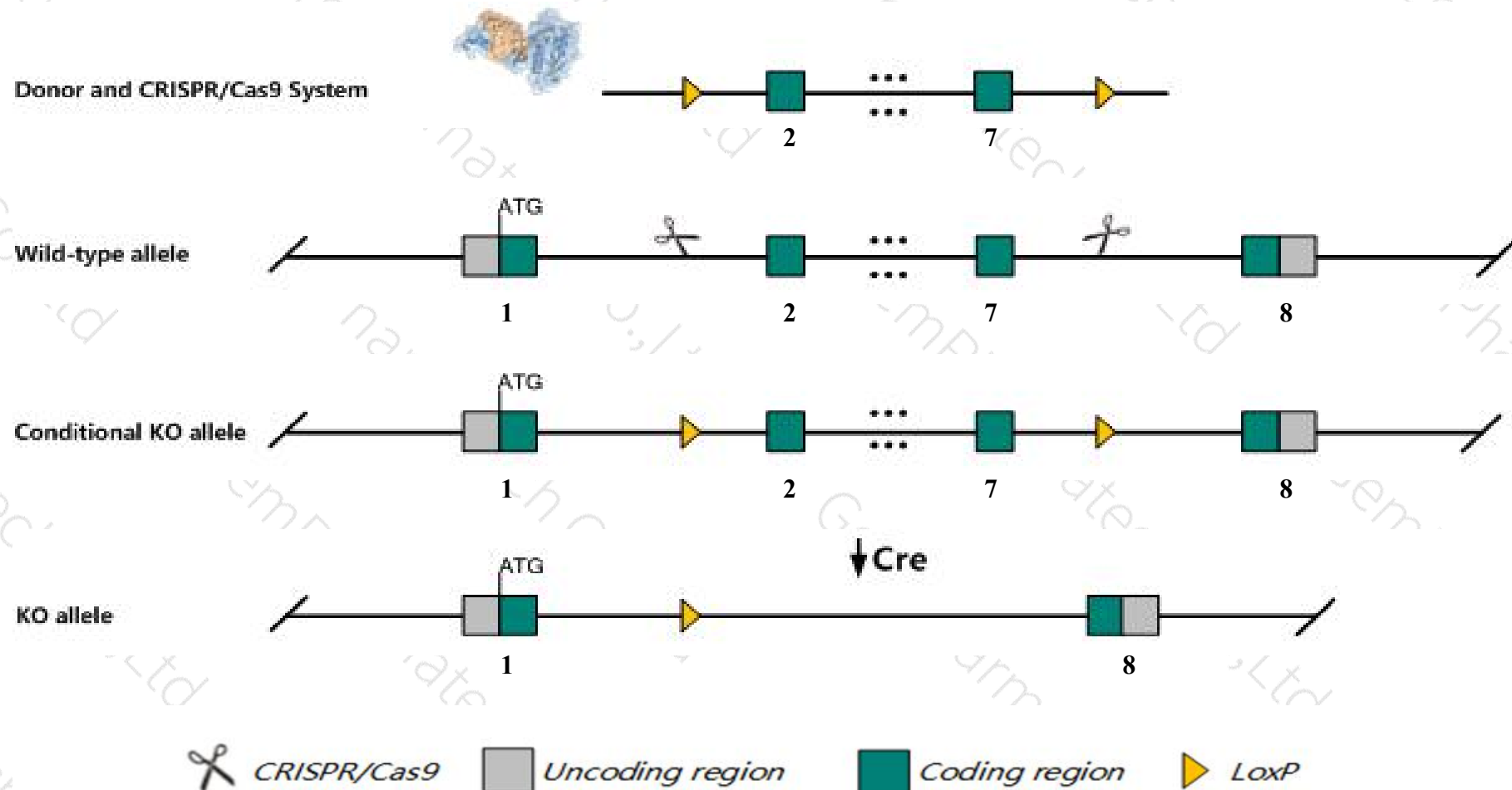
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Krt14* gene. The schematic diagram is as follows:



- The *Krt14* gene has 2 transcripts. According to the structure of *Krt14* gene, exon2-exon7 of *Krt14-201*(ENSMUST00000007272.7) transcript is recommended as the knockout region. The region contains 814bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Krt14* gene. The brief process is as follows: CRISPR/Cas9 system 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 will be 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, homozygotes for targeted null mutations develop extensive skin blistering after birth and die by 2 days of age. If keratin 16 is also expressed in skin, development is normal but later alopecia, chronic skin ulcers and stratified epithelial defects occur.
- The Intron7 is only 546bp, loxp insertion may affect mRNA splicing.
- The *Krt14* 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 loxp insertion on gene transcription, RNA splicing and protein translation cannot be predicted at existing technological level.

Gene information (NCBI)

Krt14 keratin 14 [Mus musculus (house mouse)]

Gene ID: 16664, updated on 20-Mar-2020

Summary



Official Symbol Krt14 provided by [MGI](#)

Official Full Name keratin 14 provided by [MGI](#)

Primary source [MGI:MGI:96688](#)

See related [Ensembl:ENSMUSG00000045545](#)

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 AI626930, CK-14, K14, Krt-1.14, Krt1-14

Summary This gene encodes a member of the keratin family, the most diverse group of intermediate filaments. This gene product, a type I keratin, is usually found as a heterotetramer with two keratin 5 molecules, a type II keratin. Together they form the cytoskeleton of epithelial cells. Three transcript variants encoding different isoforms have been found for this gene. [provided by RefSeq, Sep 2015]

Expression Biased expression in stomach adult (RPKM 89.1), limb E14.5 (RPKM 80.1) and 6 other tissues [See more](#)

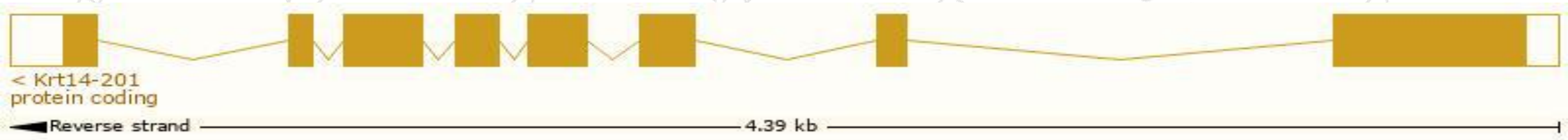
Orthologs [human](#) [all](#)

Transcript information (Ensembl)

The gene has 2 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Krt14-201	ENSMUST00000007272.7	1698	484aa	Protein coding	CCDS25413	Q61781	TSL:1 GENCODE basic APPRIS P1
Krt14-202	ENSMUST00000137265.1	1122	No protein	Processed transcript	-	-	TSL:1

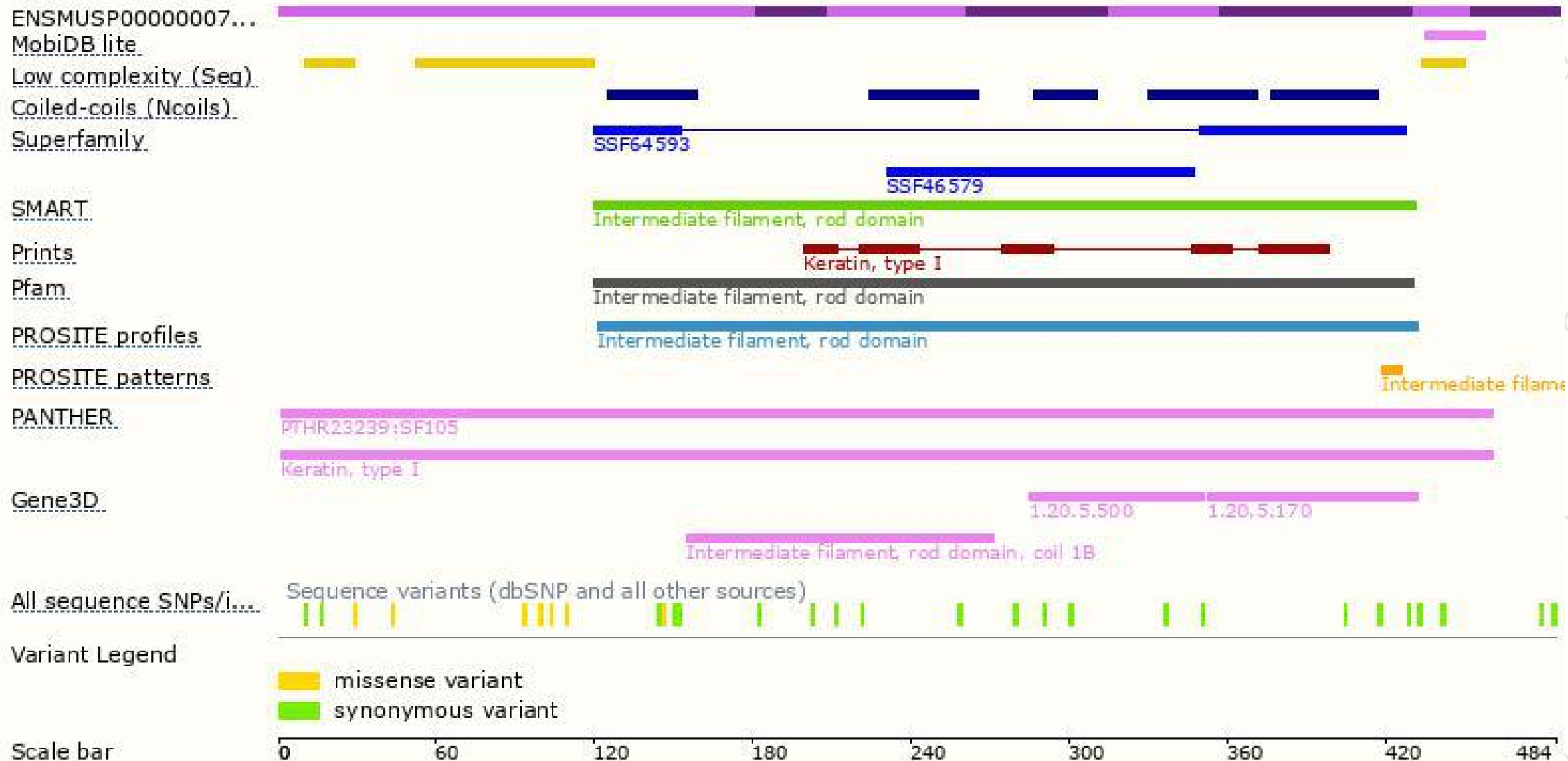
The strategy is based on the design of *Krt14-201* transcript,the transcription is shown below:



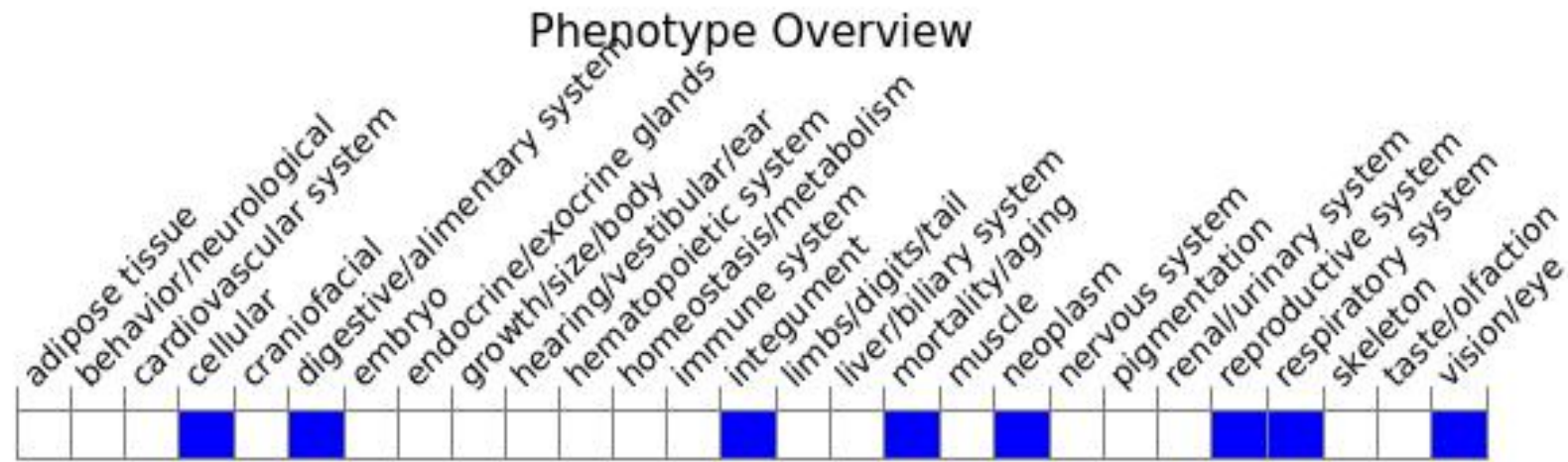
Genomic location distribution



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/>).

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

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