Selenov Cas9-KO Strategy

Designer: Daohua Xu

Reviewer: Huimin Su

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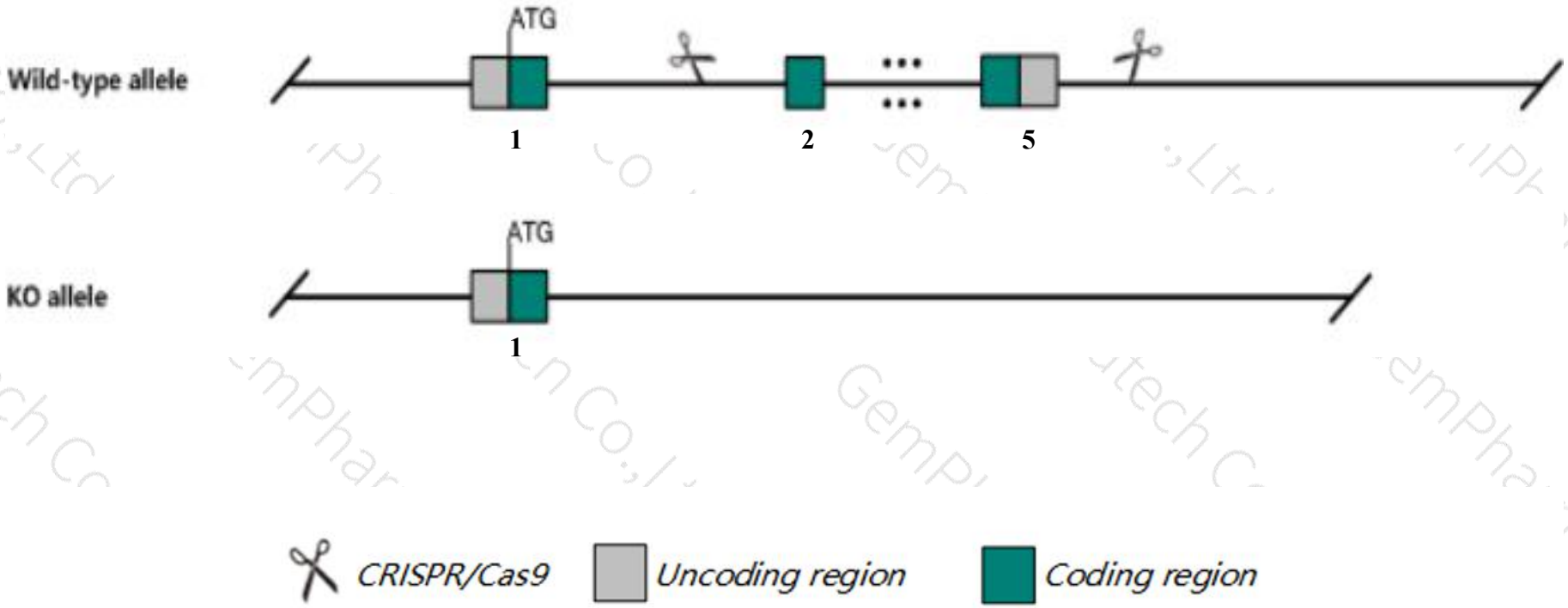
GemPharmatech Co.,Ltd

Project Overview

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

Knockout strategy

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



Technical routes

➢ The *Selenov* gene has 2 transcripts. According to the structure of *Selenov* gene, exon2-exon5 of *Selenov-201*(ENSMUST00000056589.13) transcript is recommended as the knockout region.The region contains 232bp coding sequence. Knock out the region will result in disruption of protein function.

➢ In this project we use CRISPR/Cas9 technology to modify *Selenov* 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,male mice homozygous for a mutation are viable and show normal fertility.

➢ The *Selenov* gene is located on the Chr7. 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）

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Selenov selenoprotein V [Mus musculus (house mouse)]

Gene ID: 280621, updated on 13-Mar-2020

Summary

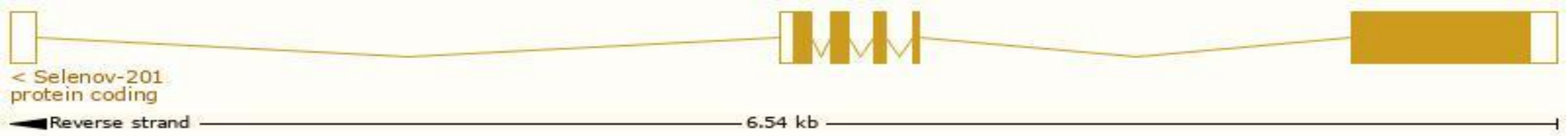
Official Symbol	Selenov provided by MGI
Official Full Name	selenoprotein V provided byMGI
Primary source	MGI:MGI:3608324
See related	Ensembl:ENSMUSG00000046750
Gene type	protein coding
RefSeq status	REVIEWED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	Selv
Summary	This gene encodes a selenoprotein containing a selenocysteine (Sec) residue, which is encoded by the UGA codon that normally signals translation termination. The 3' UTRs of selenoprotein mRNAs contain a conserved stem-loop structure, the Sec insertion sequence (SECIS) element, which is necessary for the recognition of UGA as a Sec codon rather than as a stop signal. This protein is specifically expressed in the testis. It belongs to the SelWTH family, which possesses a thioredoxin-like fold and a conserved CxxU (C is cysteine, U is Sec) motif, suggesting a redox function for this gene. [provided by RefSeq, Apr 2017]
Expression	Restricted expression toward testis adult (RPKM 175.4)See more
Orthologs	human all

Transcript information（Ensembl）

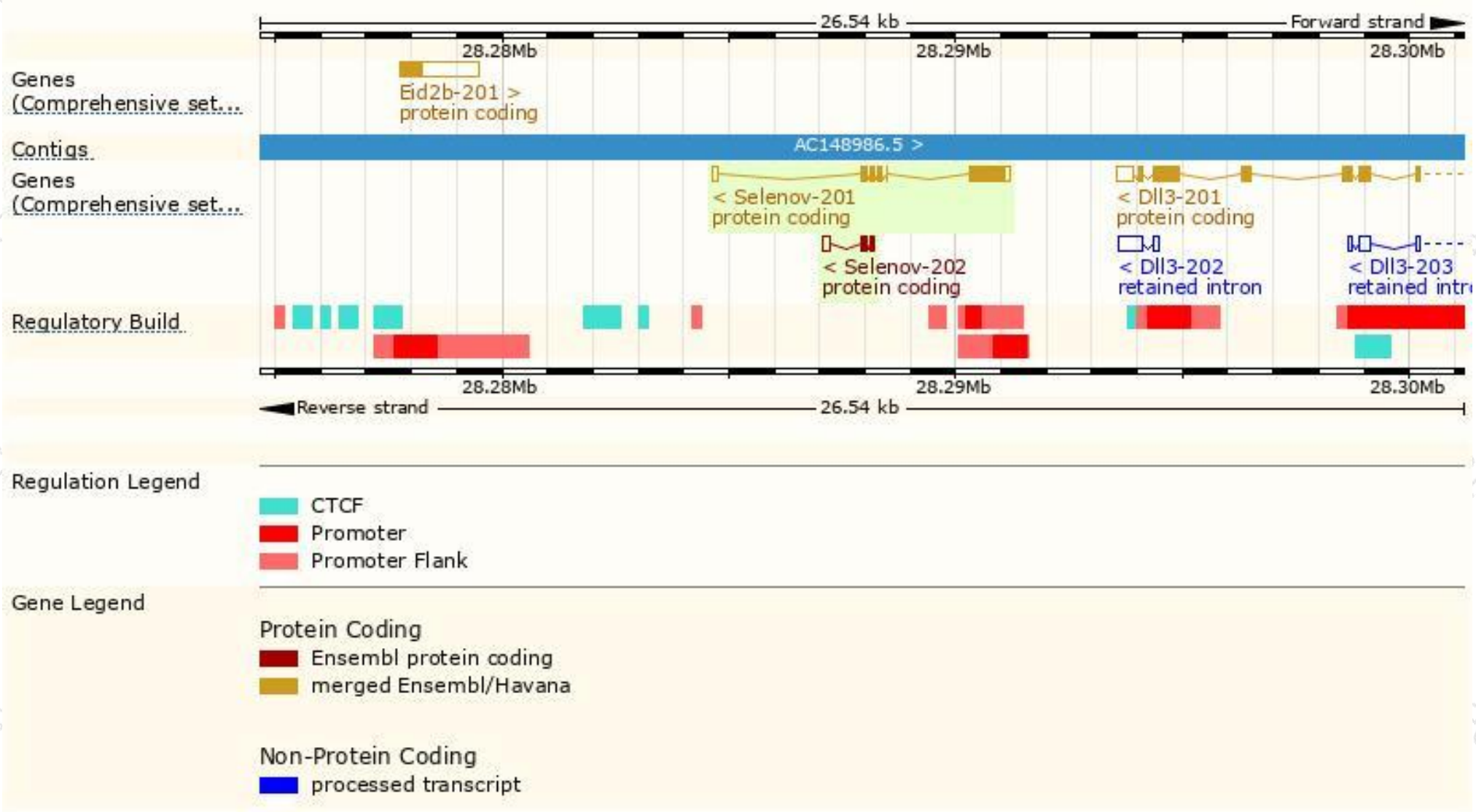
The gene has 2 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Selenov-201	ENSMUST00000056589.13	1267	328aa	Protein coding	CCDS39855	D3YXG1 Q5FWB9	TSL:1 GENCODE basic APPRIS P1
Selenov-202	ENSMUST00000156408.1	383	46aa	Protein coding	-	F6TYD6	CDS 5' incomplete TSL:3

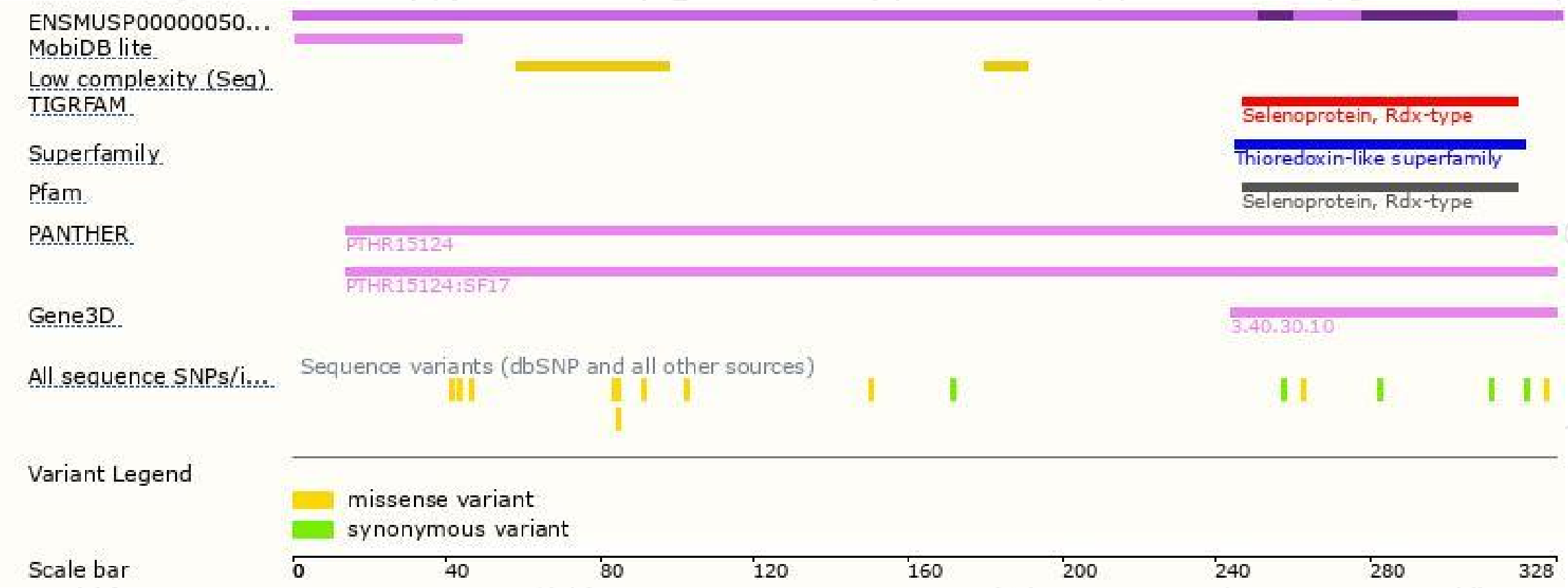
The strategy is based on the design of *Selenov-201* transcript,the transcription is shown below:



Genomic location distribution



Protein domain



集萃药康
GemPharmatech

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

Tel: 400-9660890

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