

Selenow Cas9-KO Strategy

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Reviewer:

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Project Overview

Project Name

Selenow

Project type

Cas9-KO

Strain background

C57BL/6JGpt

Knockout strategy

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



- The *Selenow* gene has 1 transcript. According to the structure of *Selenow* gene, exon1-exon5 of *Selenow*-201 (ENSMUST00000044355.9) 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 *Selenow* gene. The brief process is as follows: CRISPR/Cas9 system

- The *Selenow* 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)

Selenow selenoprotein W [Mus musculus (house mouse)]

Gene ID: 20364, updated on 19-Mar-2019

Summary

Official Symbol Selenow provided by [MGI](#)

Official Full Name selenoprotein W provided by [MGI](#)

Primary source [MGI:MGI:1100878](#)

See related [Ensembl:ENSMUSG00000041571](#)

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 Sepw1, selW

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 that is necessary for the recognition of UGA as a Sec codon rather than as a stop signal. This protein is highly expressed in skeletal muscle and brain. It belongs to the SelWTH family, which possesses a thioredoxin-like fold and a conserved CxxU (C is cysteine, U is Sec) motif, and has been shown to function as a glutathione-dependent antioxidant in vivo. Studies in mouse suggest that this selenoprotein is involved in muscle growth and differentiation, and in the protection of neurons from oxidative stress during neuronal development. [provided by RefSeq, Apr 2017]

Expression Ubiquitous expression in frontal lobe adult (RPKM 402.4), cortex adult (RPKM 391.8) and 28 other tissues [See more](#)

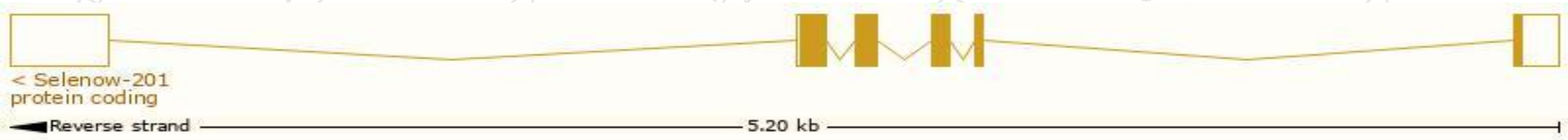
Orthologs [human](#) [all](#)

Transcript information (Ensembl)

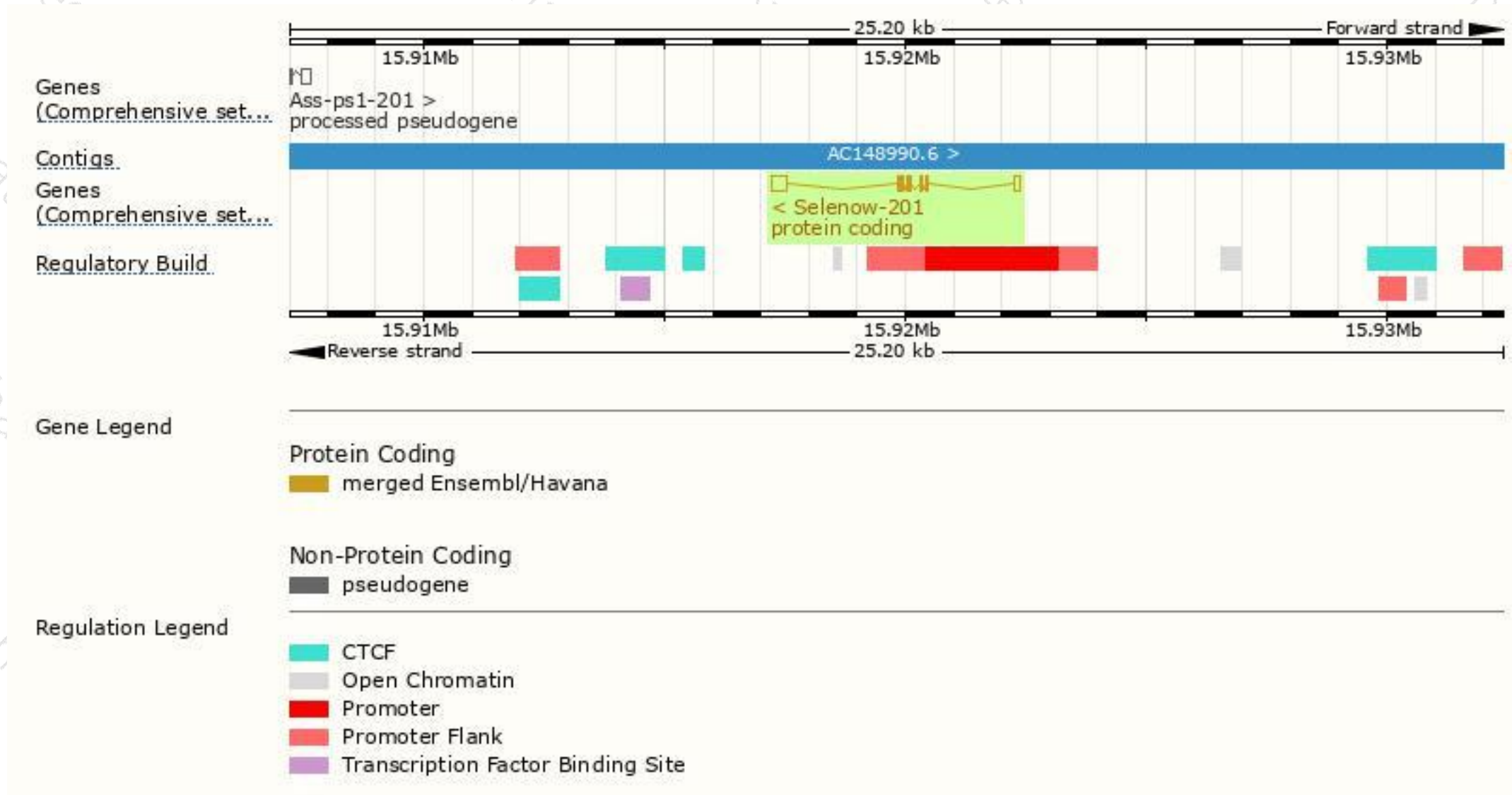
The gene has 1 transcript, and the transcript is shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Selenow-201	ENSMUST00000044355.9	736	88aa	Protein coding	CCDS39778	P63300	TSL:1 GENCODE basic APPRIS P1

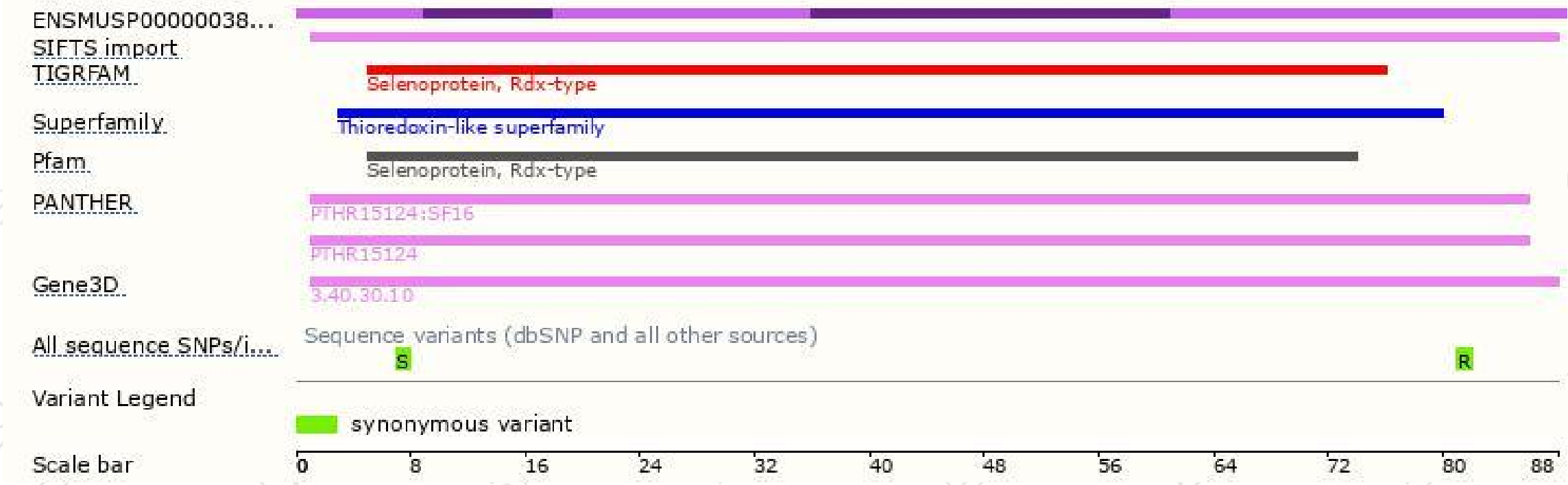
The strategy is based on the design of *Selenow-201* transcript, The transcription is shown below



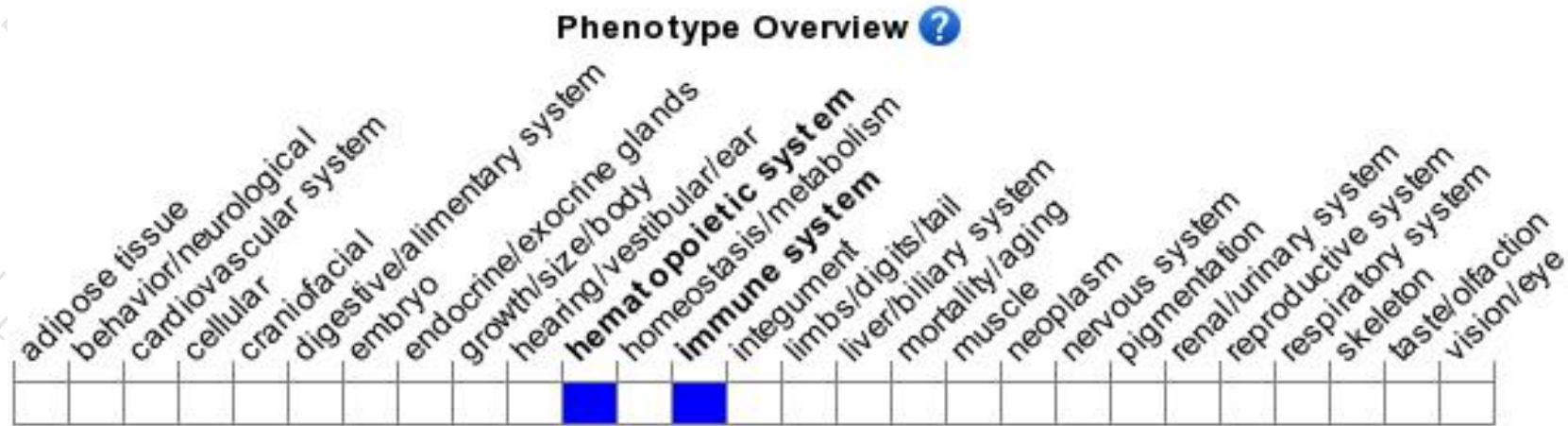
Genomic location distribution



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/>).

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

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