

Rnf103 Cas9-KO Strategy

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Reviewer:

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Project Overview

Project Name

Rnf103

Project type

Cas9-KO

Strain background

C57BL/6JGpt

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Rnf103* gene. The schematic diagram is as follows:



- The *Rnf103* gene has 4 transcripts. According to the structure of *Rnf103* gene, exon2 of *Rnf103-201* (ENSMUST00000064637.10) transcript is recommended as the knockout region. The region contains 140bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Rnf103* gene. The brief process is as follows: CRISPR/Cas9 system

- According to the existing MGI data, Mice homozygous for a knock-out allele display significantly increased anxiety-like behavior under stressful conditions as well as increased prepulse inhibition and a reduced startle amplitude with no detectable changes in exploratory locomotion or behavioral despair.
- The *Rnf103* gene is located on the Chr6. 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)

Rnf103 ring finger protein 103 [Mus musculus (house mouse)]

Gene ID: 22644, updated on 31-Jan-2019

Summary



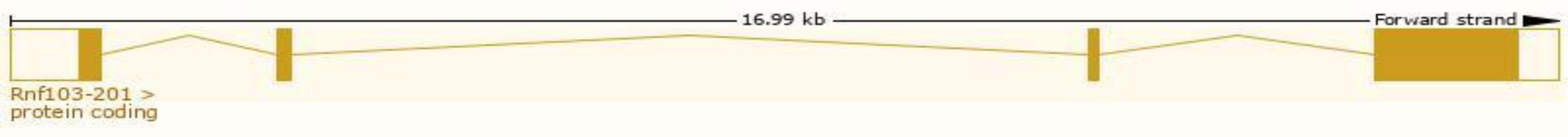
Official Symbol	Rnf103 provided by MGI
Official Full Name	ring finger protein 103 provided by MGI
Primary source	MGI:MGI:109483
See related	Ensembl:ENSMUSG00000052656
Gene type	protein coding
RefSeq status	REVIEWED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	AW146237, AW212918, Zfp103, kf-1
Summary	This gene encodes a member of the RING finger family of E3 ubiquitin-protein ligases. These proteins catalyze the transfer of the ubiquitin protein from a ubiquitin E2 enzyme to a protein substrate. Homozygous knockout mice for this gene exhibit enhanced anxiety-like behavior. Alternative splicing results in multiple transcript variants. [provided by RefSeq, May 2015]
Expression	Ubiquitous expression in colon adult (RPKM 26.1), duodenum adult (RPKM 20.1) and 28 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

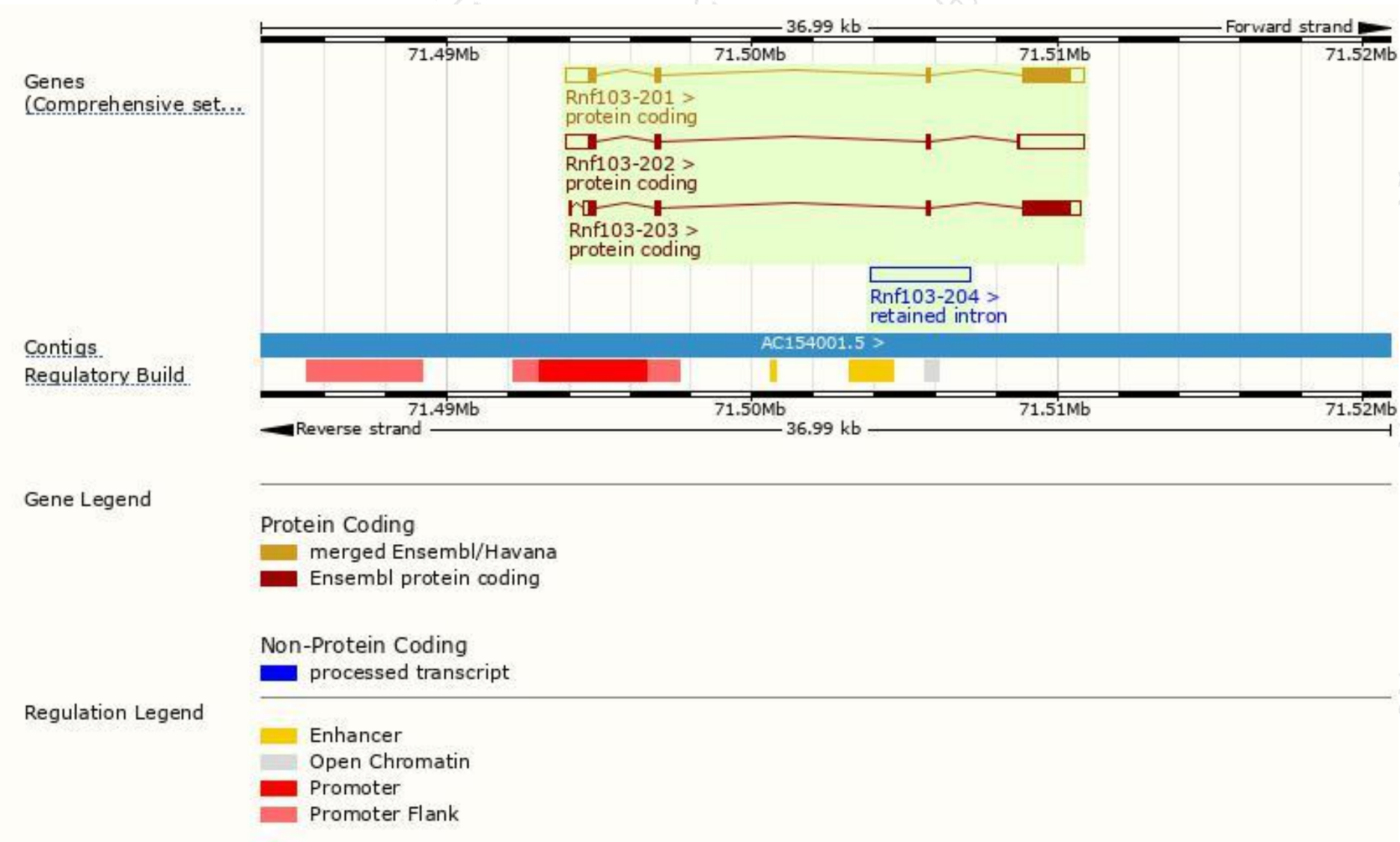
The gene has 4 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Rnf103-201	ENSMUST00000064637.10	3264	683aa	Protein coding	CCDS39508	Q9R1W3	TSL:1 GENCODE basic APPRIS P1
Rnf103-203	ENSMUST00000114179.2	2671	683aa	Protein coding	CCDS39508	Q9R1W3	TSL:5 GENCODE basic APPRIS P1
Rnf103-202	ENSMUST00000114178.7	3431	185aa	Protein coding	-	D3Z0Y5	TSL:1 GENCODE basic
Rnf103-204	ENSMUST00000150069.2	3271	No protein	Retained intron	-	-	TSL:NA

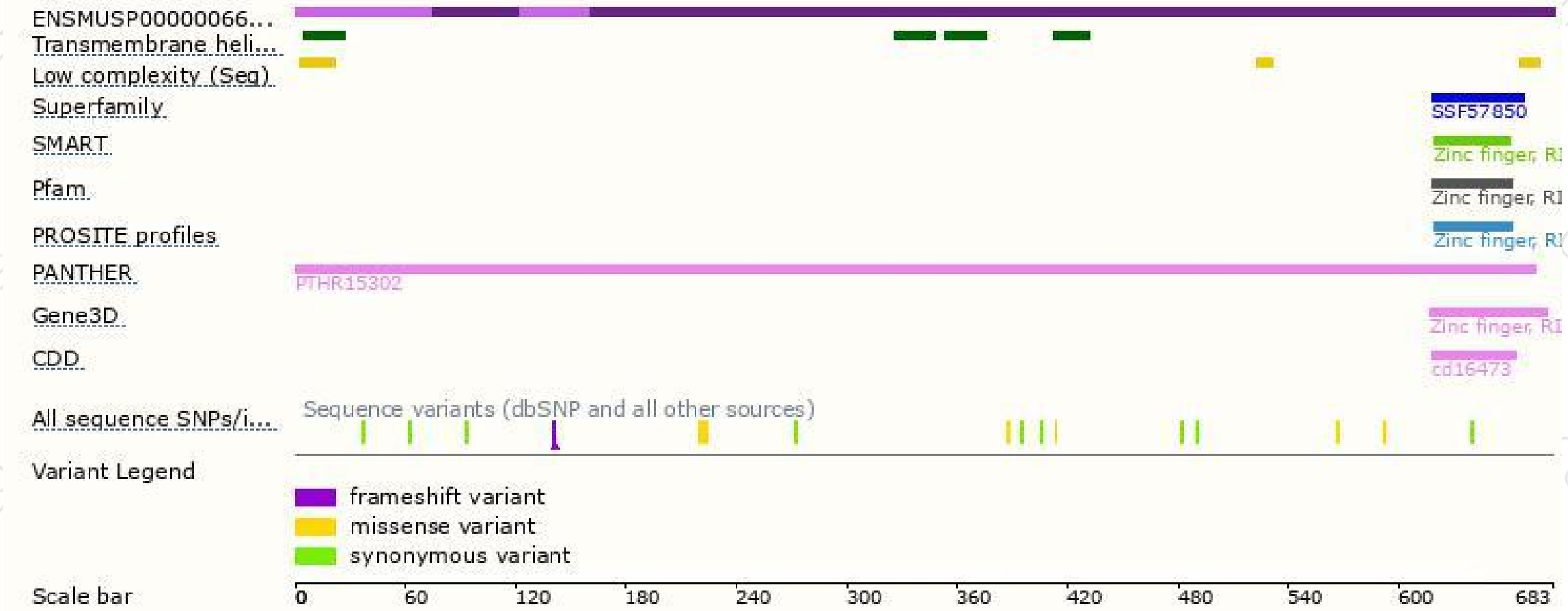
The strategy is based on the design of *Rnf103-201* transcript,The transcription is shown below



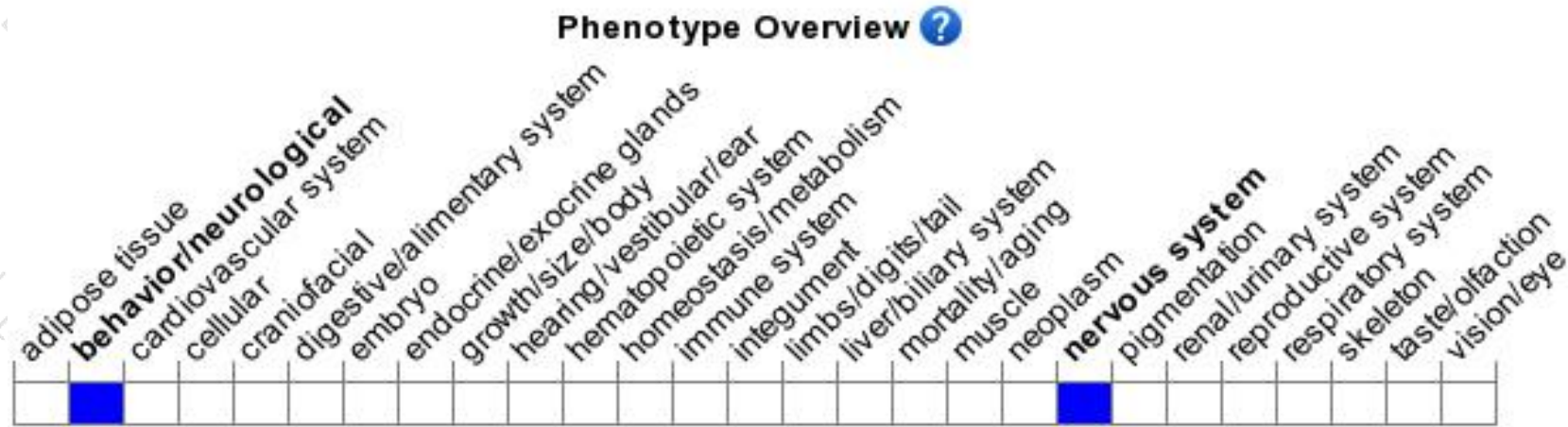
Genomic location distribution



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 display significantly increased anxiety-like behavior under stressful conditions as well as increased prepulse inhibition and a reduced startle amplitude with no detectable changes in exploratory locomotion or behavioral despair.

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

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