

Vgll2 Cas9-KO Strategy

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Project Overview

Project Name

Vgll2

Project type

Cas9-KO

Strain background

C57BL/6JGpt

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Vgll2* gene. The schematic diagram is as follows:



- The *Vgll2* gene has 2 transcripts. According to the structure of *Vgll2* gene, exon2 of *Vgll2-202* (ENSMUST00000163017.9) transcript is recommended as the knockout region. The region contains 307bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Vgll2* gene. The brief process is as follows: CRISPR/Cas9 system

- According to the existing MGI data, Mice homozygous for a knock-out allele exhibit abnormal skeletal muscle fiber type ratio and impaired exercise endurance.
- The knockout region is near to the N-terminal of *Gm24084* gene, this strategy may influence the regulatory function of the N-terminal of *Gm24084* gene.
- The *Vgll2* gene is located on the Chr10. 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)

Vgll2 vestigial like family member 2 [*Mus musculus* (house mouse)]

Gene ID: 215031, updated on 27-Aug-2019

Summary

- Official Symbol** Vgll2 provided by MGI
- Official Full Name** vestigial like family member 2 provided by MGI
- Primary source** MGI:MGI:2447460
- See related** Ensembl:ENSMUSG00000049641
- 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** Vito1; vgl-2; VITO-1; C130057C21Rik
- Summary** This gene is a member of the Vestigial-like (Vgl) gene family and is upregulated during muscle differentiation. The product of this gene interacts with and modifies the DNA-binding properties of the transcription factor, TEF-1, and is important for muscle tissue development. Reduced expression of this gene leads to a reduction in the terminal differentiation of muscle cells. Alternate splicing results in multiple protein isoforms. [provided by RefSeq, Jul 2014]
- Expression** Biased expression in limb E14.5 (RPKM 21.9), mammary gland adult (RPKM 2.2) and 2 other tissues [See more](#)
- Orthologs** [human](#) [all](#)

Genomic context

Location: 10; 10 B3 See Vgll2 in [Genome Data Viewer](#)

Exon count: 3

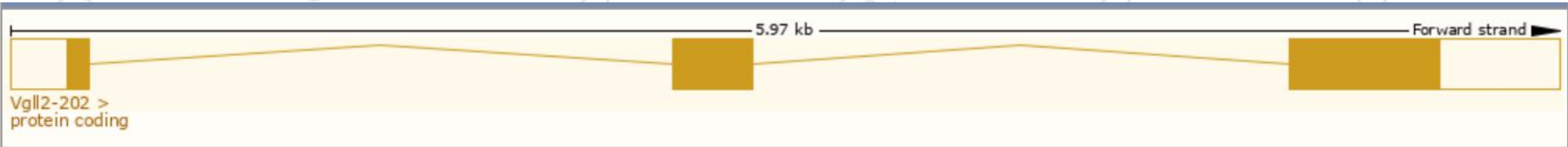
Annotation release	Status	Assembly	Chr	Location
108	current	GRCh38.p6 (GCF_000001635.26)	10	NC_000076.6 (52022502..52028471)
Build 37.2	previous assembly	MGSCv37 (GCF_000001635.18)	10	NC_000076.5 (51742492..51748277)

Transcript information (Ensembl)

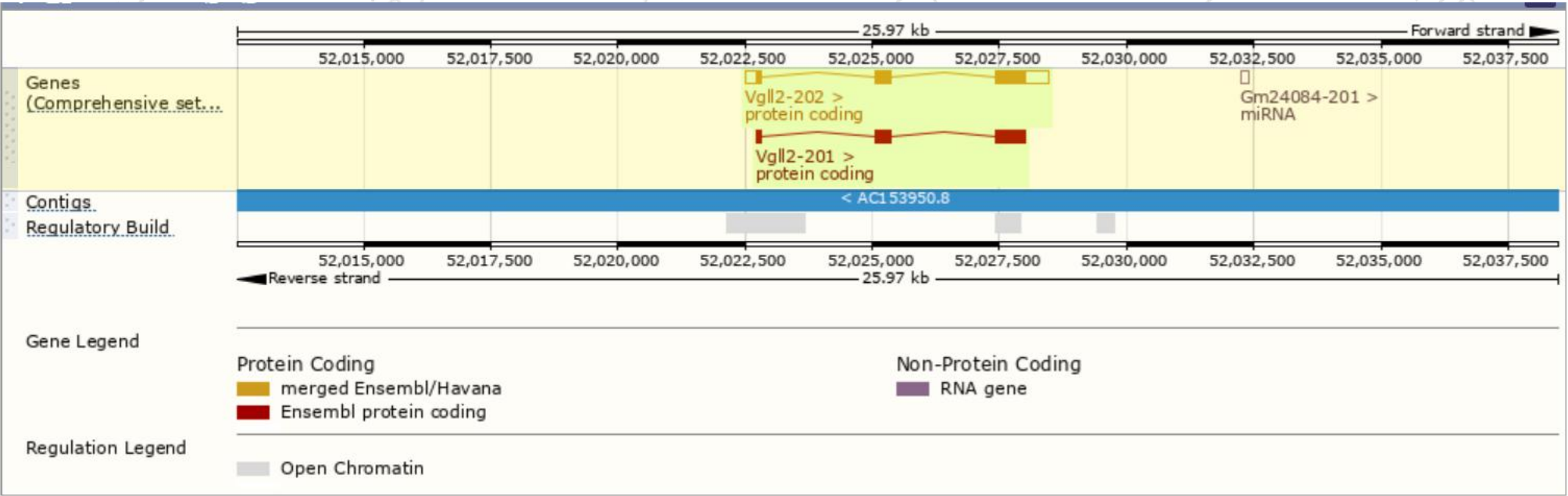
The gene has 2 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Vgll2-202	ENSMUST00000163017.9	1650	322aa	Protein coding	CCDS23837	Q8BGW8	TSL:1 Gencode basic APPRIS P3
Vgll2-201	ENSMUST00000058347.5	966	321aa	Protein coding	CCDS78812	A0A0R4J0M3	TSL:1 Gencode basic APPRIS ALT2

The strategy is based on the design of *Vgll2-202* transcript,The transcription is shown below



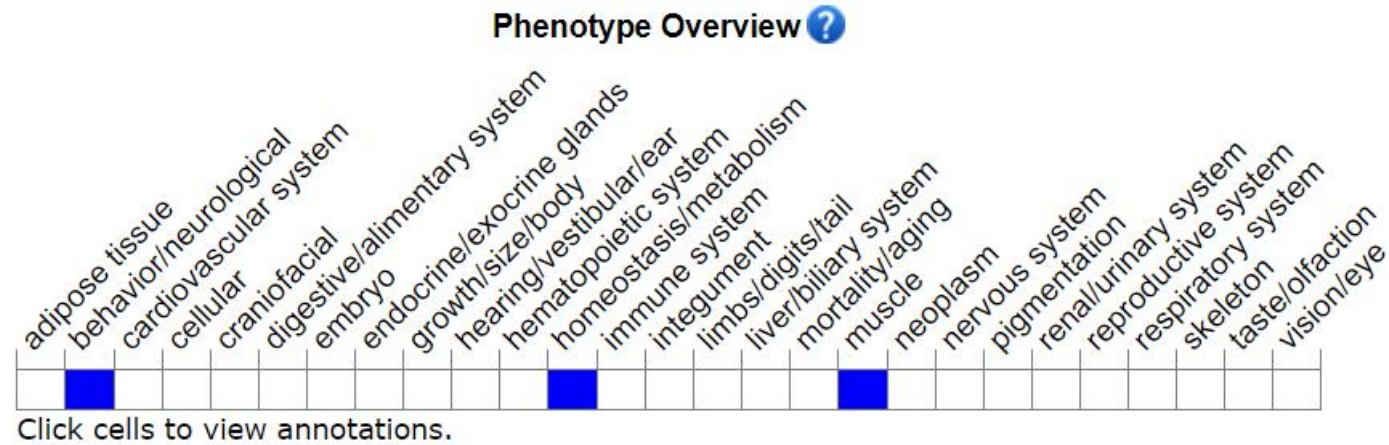
Genomic location distribution



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/>).

Mice homozygous for a knock-out allele exhibit abnormal skeletal muscle fiber type ratio and impaired exercise endurance.

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

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