Ovol1 Cas9-KO Strategy

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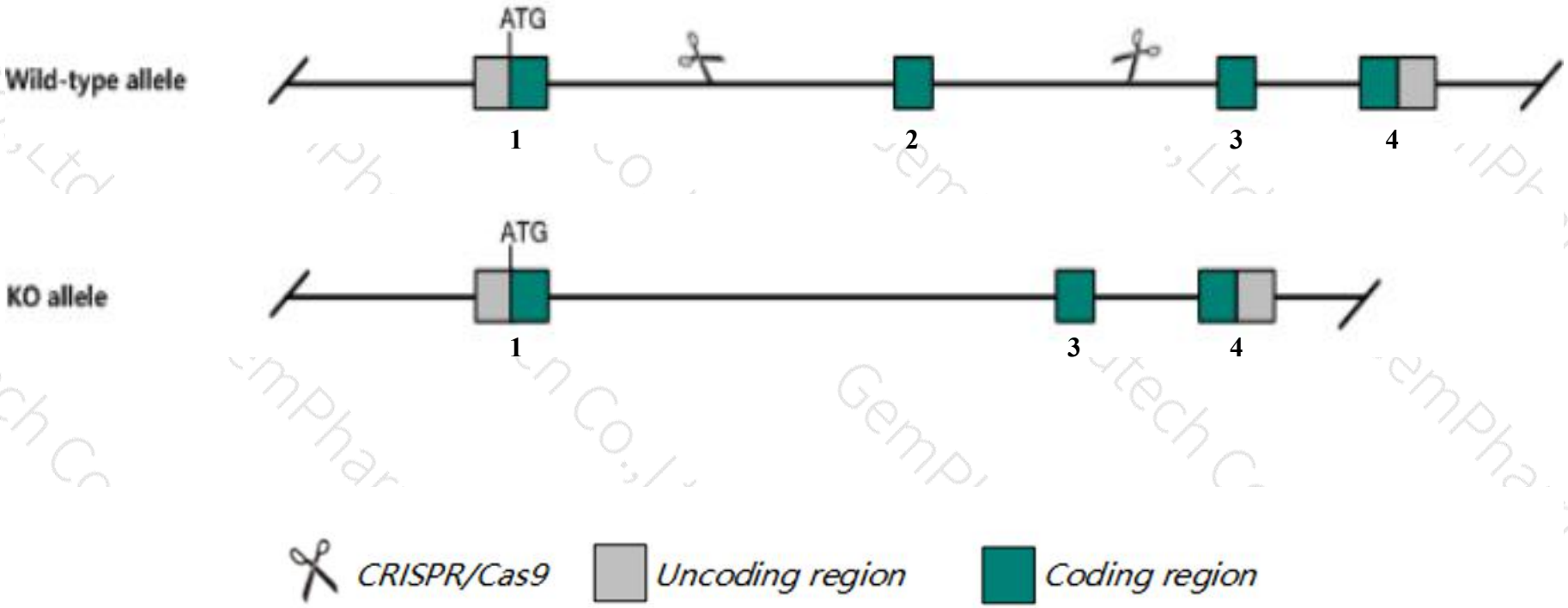
Project Overview

Project Name	***Ovol1***
Project type	**Cas9-KO**
Strain background	**C57BL/6JGpt**

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Ovol1* gene. The schematic diagram is as follows:



Technical routes

➢ The *Ovol1* gene has 2 transcripts. According to the structure of *Ovol1* gene, exon2 of *Ovol1-201*(ENSMUST00000025861.2) transcript is recommended as the knockout region.The region contains 218bp coding sequence. Knock out the region will result in disruption of protein function.

➢ In this project we use CRISPR/Cas9 technology to modify *Ovol1* 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,null mutant homozygotes show reduced growth, abnormal hair, and cystic kidneys. Females are subfertile with dilated uterus and cervix, and constricted or imperforate vagina. Mutant males have small testes, with few mature germ cells.

➢ The *Ovol1* gene is located on the Chr19. 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）

集萃药康 GemPharmatech

Ovol1 ovo like zinc finger 1 [*Mus musculus* (house mouse)]

Gene ID: 18426, updated on 26-Jun-2020

Summary

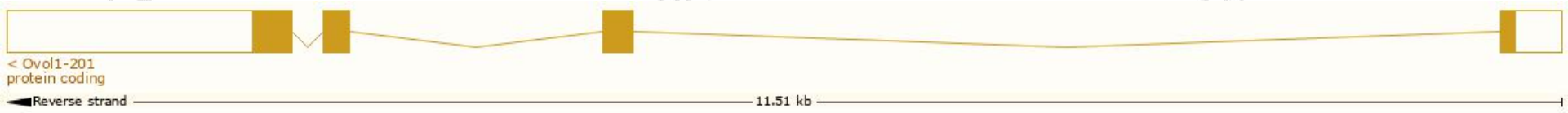
Official Symbol	Ovol1 provided by MGI
Official Full Name	ovo like zinc finger 1 provided by MGI
Primary source	MGI:MGI:1330290
See related	Ensembl:ENSMUSG00000024922
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	Ovo1; movo1; BB147136
Expression	Biased expression in duodenum adult (RPKM 17.2), small intestine adult (RPKM 13.4) and 10 other tissues See more
Orthologs	human all

Transcript information（Ensembl）

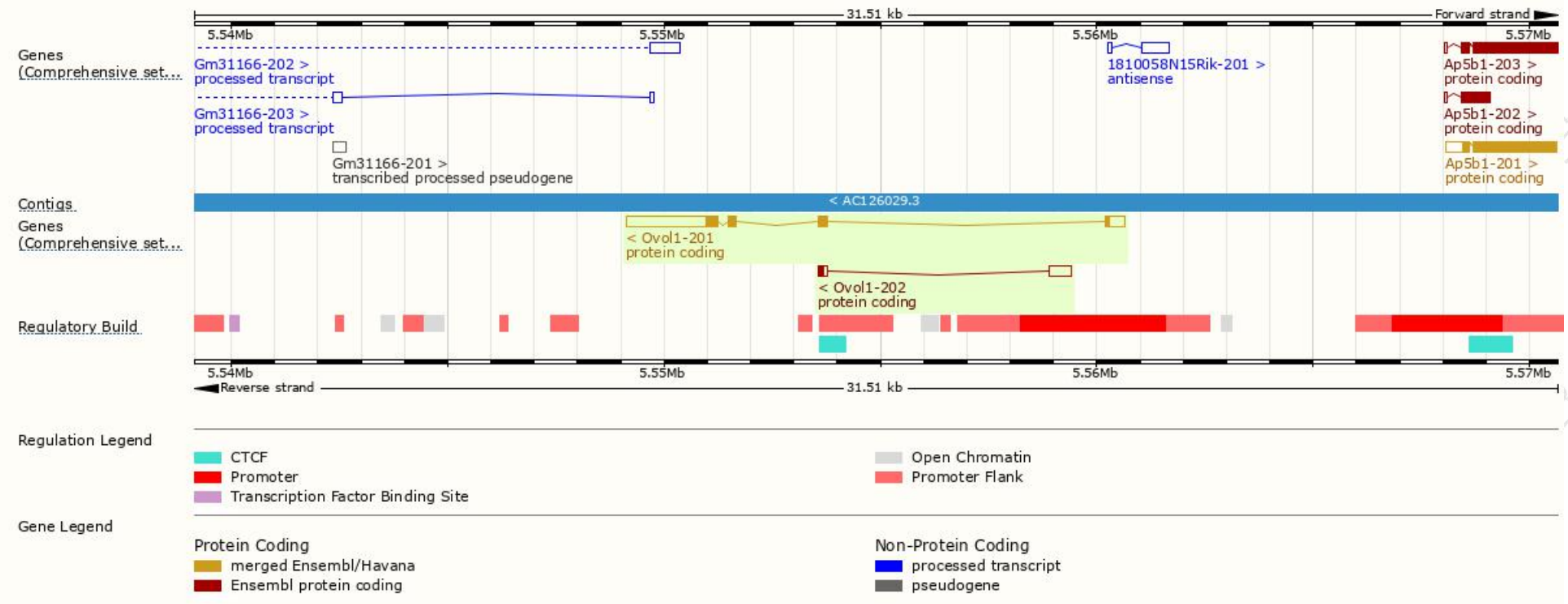
The gene has 2 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein ▲	Biotype	CCDS	UniProt	Flags
Ovol1-202	ENSMUST00000238060.1	728	42aa	Protein coding	-	A0A494BAQ0	CDS 3' incomplete
Ovol1-201	ENSMUST00000025861.2	2972	267aa	Protein coding	CCDS29469	Q9WTJ2	TSL:1 GENCODE basic APPRIS P1

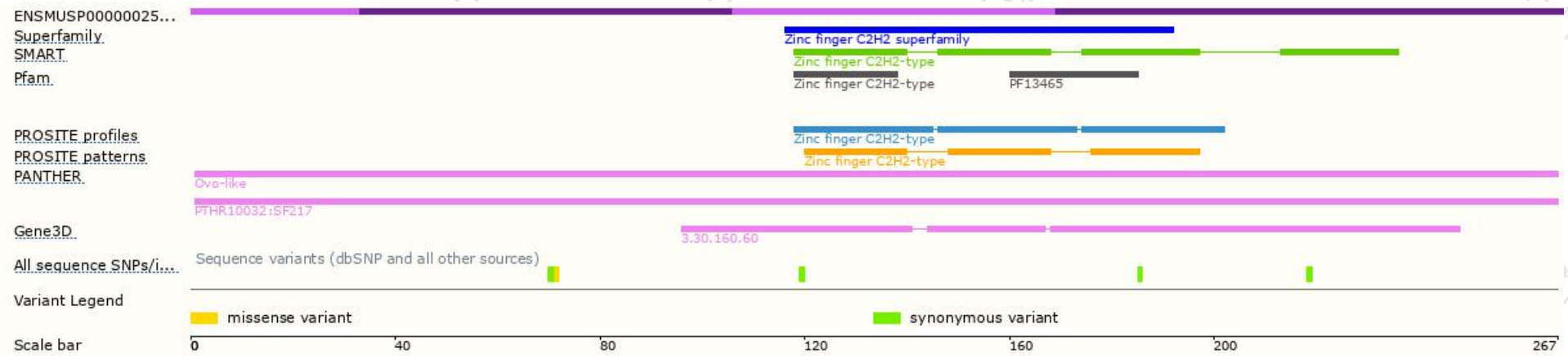
The strategy is based on the design of *Ovol1-201* transcript,the transcription is shown below:



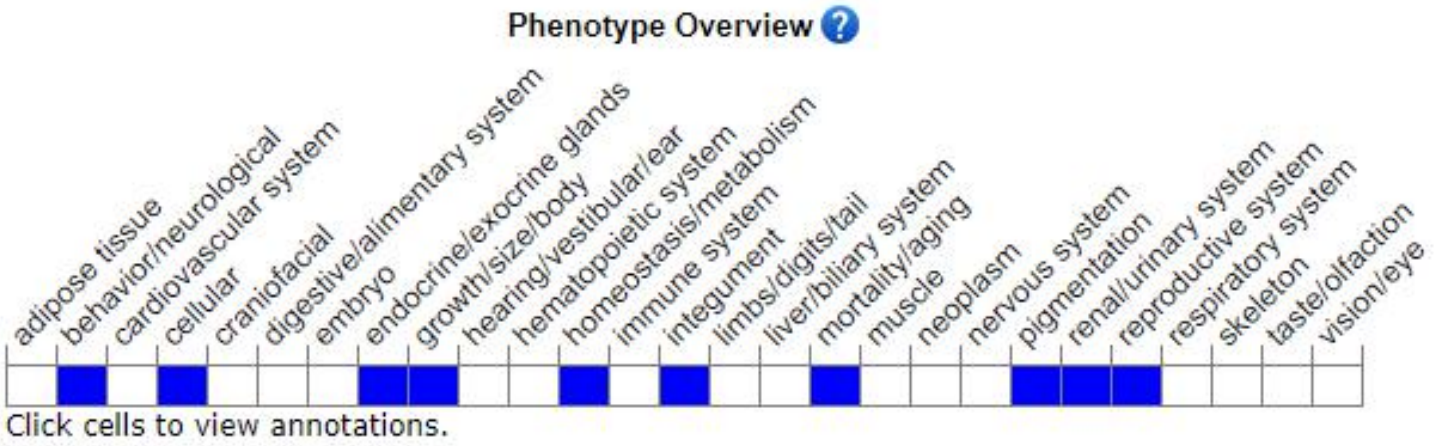
Genomic location distribution



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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