Actg2 Cas9-KO Strategy

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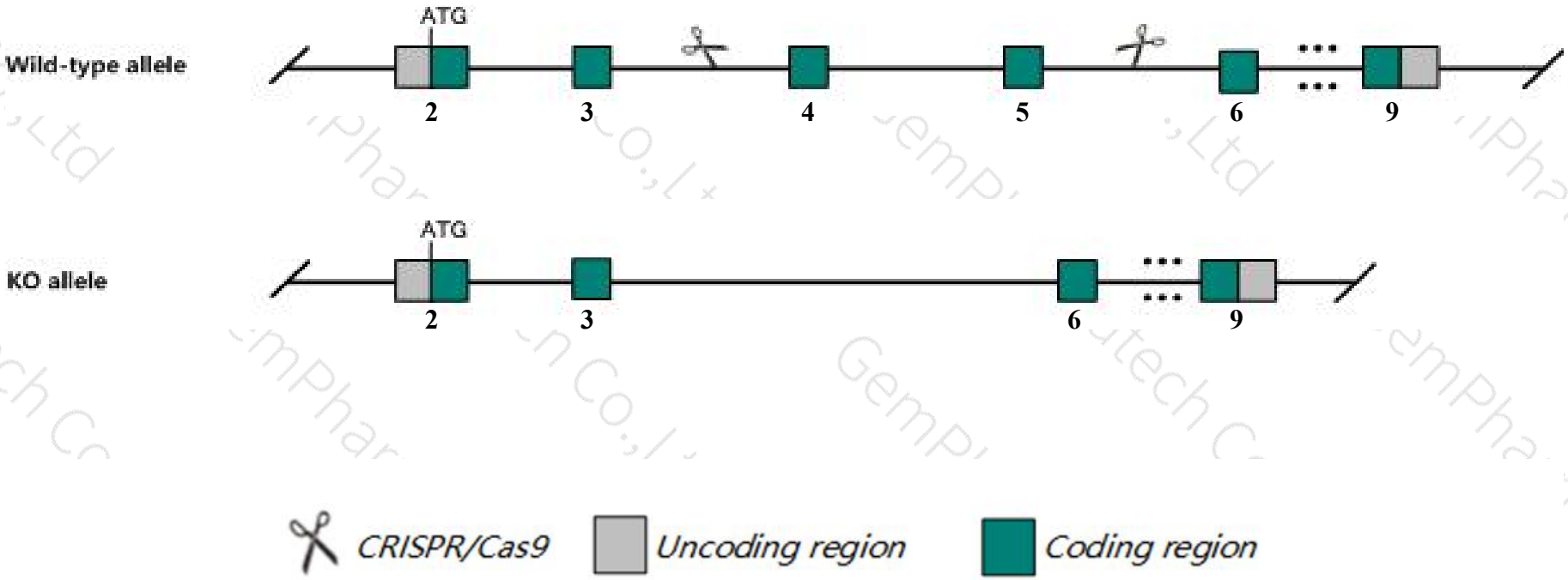
Project Overview

Project Name	***Actg2***
Project type	**Cas9-KO**
Strain background	**C57BL/6JGpt**

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Actg2* gene. The schematic diagram is as follows:



Technical routes

➢ The *Actg2* gene has 6 transcripts. According to the structure of *Actg2* gene, exon4-exon5 of *Actg2-201* (ENSMUST00000075161.11) transcript is recommended as the knockout region.The region contains 196bp coding sequence. Knock out the region will result in disruption of protein function.

➢ In this project we use CRISPR/Cas9 technology to modify *Actg2* gene. The brief process is as follows: CRISPR/Cas9 system

Notice

➢ The *Actg2* 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）

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Actg2 actin, gamma 2, smooth muscle, enteric [Mus musculus (house mouse)]

Gene ID: 11468, updated on 31-Jan-2019

Summary

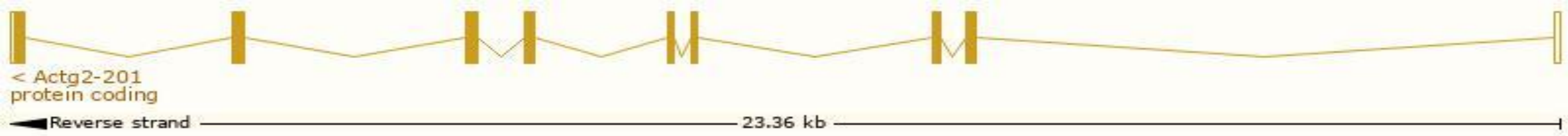
Official Symbol	Actg2 provided by MGI
Official Full Name	actin, gamma 2, smooth muscle, enteric provided by MGI
Primary source	MGI:MGI:104589
See related	Ensembl:ENSMUSG00000059430
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	ACTA3, Act-4, Act4, SMGA
Expression	Biased expression in bladder adult (RPKM 2840.7), colon adult (RPKM 638.4) and 4 other tissues See more
Orthologs	human all

Transcript information（Ensembl）

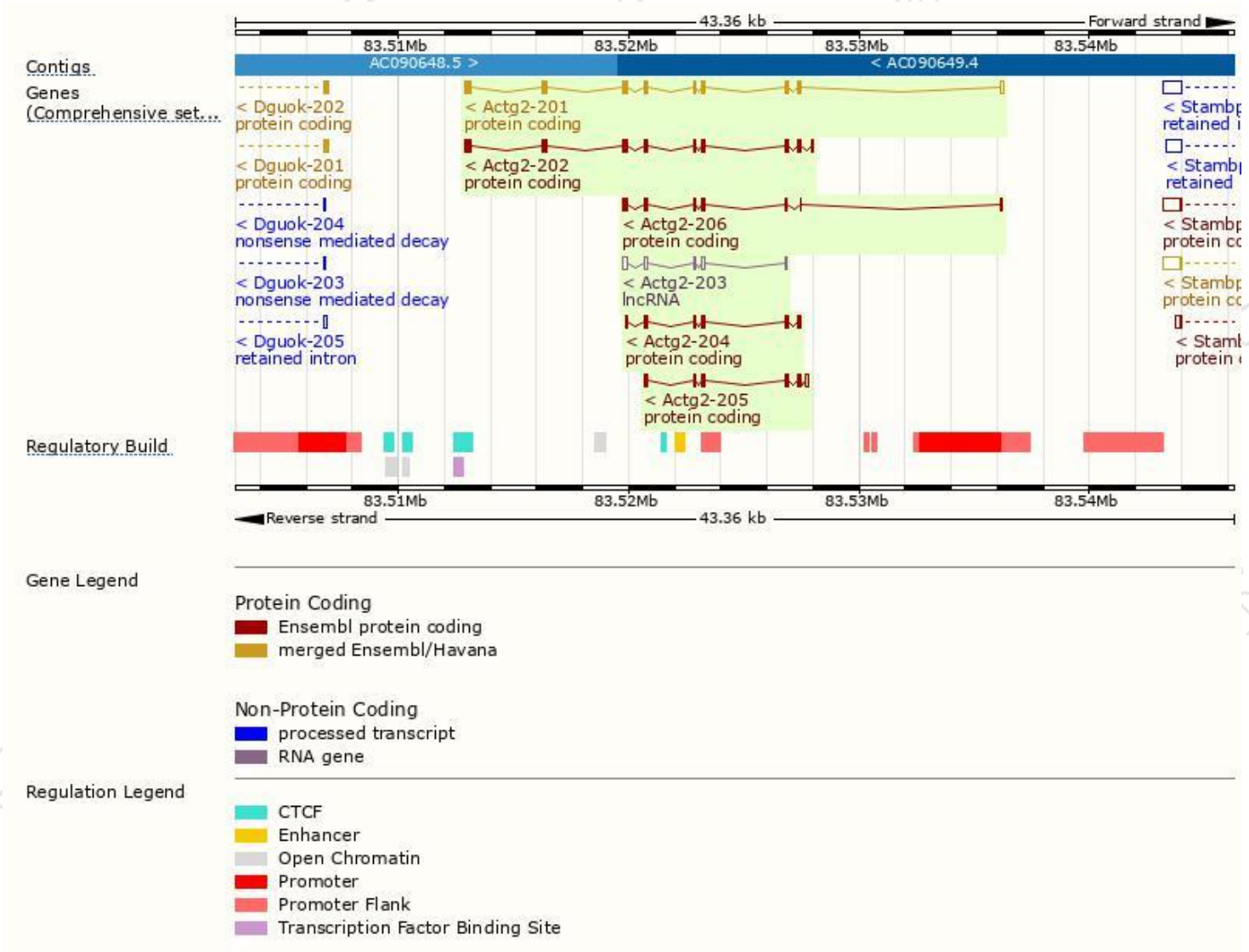
The gene has 6 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Actg2-201	ENSMUST00000075161.11	1333	376aa	Protein coding	CCDS51822	P63268 Q3UJ36	TSL:1 GENCODE basic APPRIS P1
Actg2-202	ENSMUST00000121731.7	1273	376aa	Protein coding	CCDS51822	P63268 Q3UJ36	TSL:5 GENCODE basic APPRIS P1
Actg2-205	ENSMUST00000152029.1	772	195aa	Protein coding	-	D3Z2K3	CDS 3' incomplete TSL:2
Actg2-206	ENSMUST00000205926.1	716	195aa	Protein coding	-	A0A0U1RQ96	CDS 3' incomplete TSL:3
Actg2-204	ENSMUST00000141904.7	713	221aa	Protein coding	-	D3YZY0	CDS 3' incomplete TSL:2
Actg2-203	ENSMUST00000124933.1	673	No protein	lncRNA	-	-	TSL:5

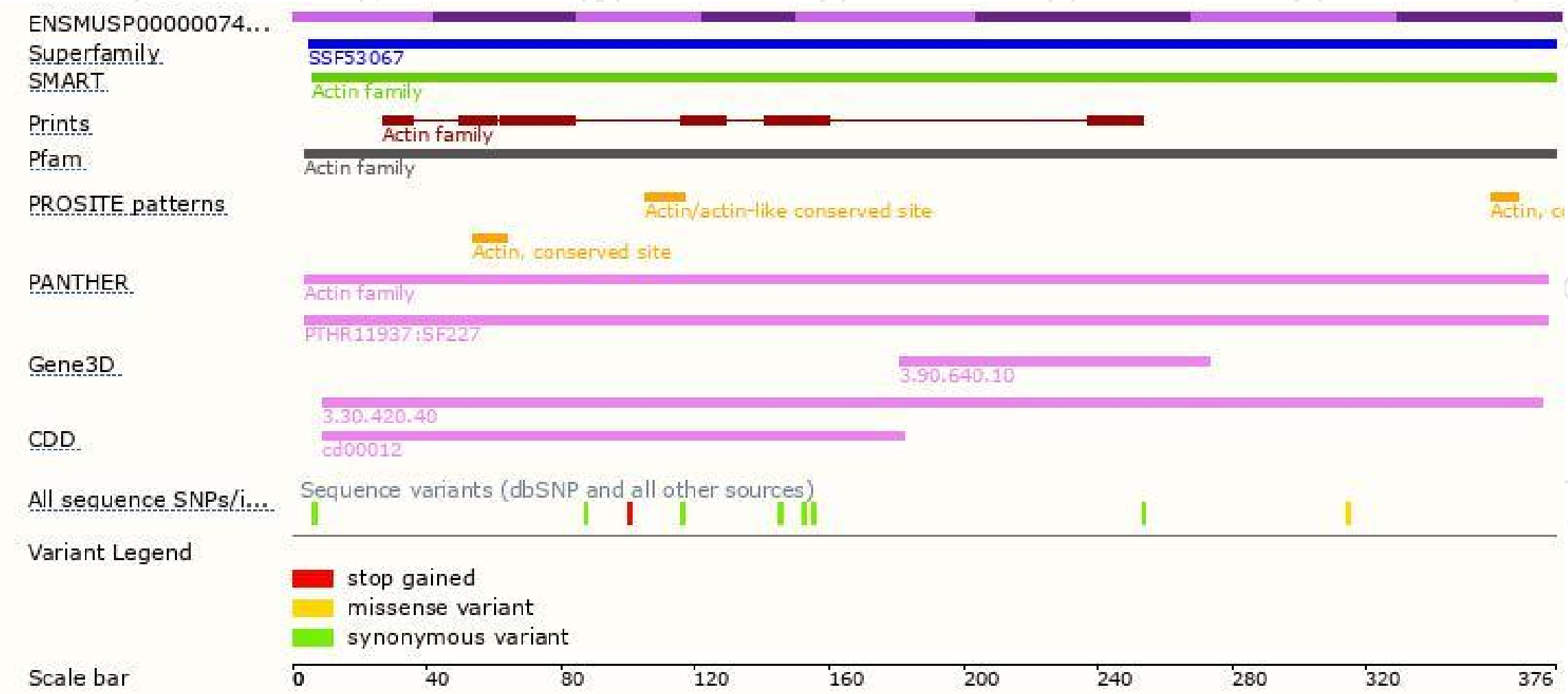
The strategy is based on the design of *Actg2-201* transcript,The transcription is shown below



Genomic location distribution



Protein domain



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

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