Spag1 Cas9-KO Strategy

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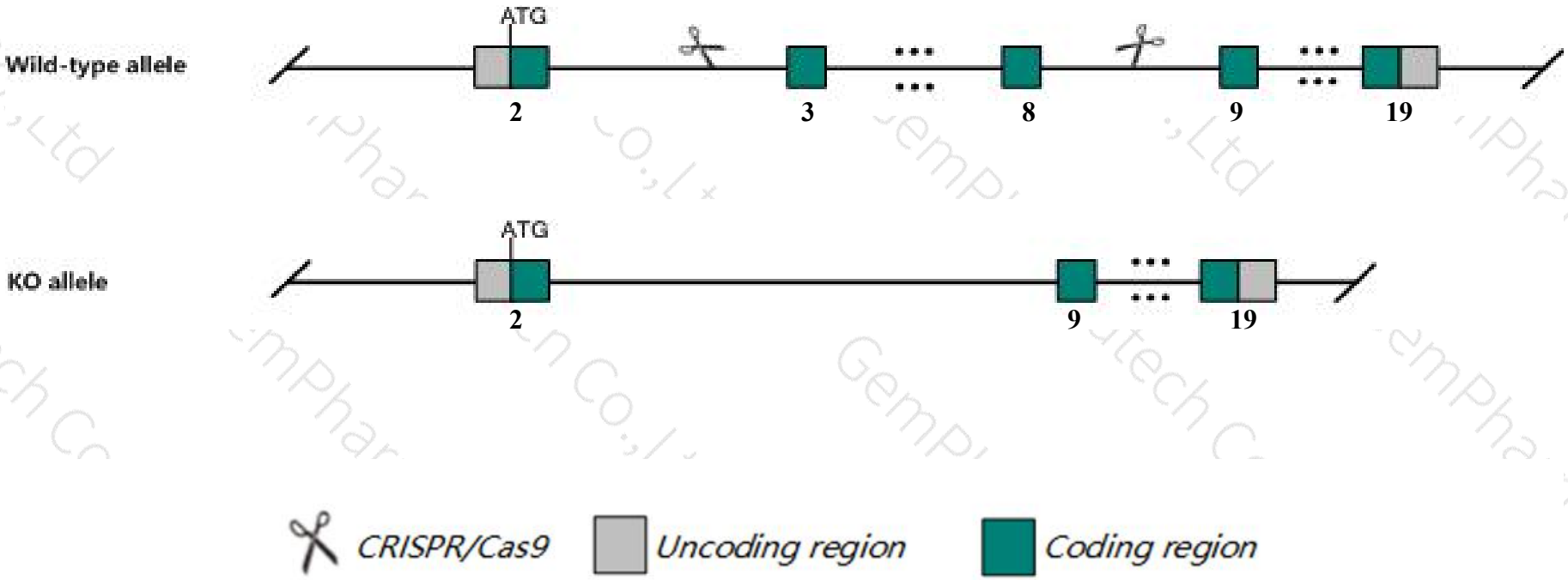
Project Overview

Project Name	***Spag1***
Project type	**Cas9-KO**
Strain background	**C57BL/6JGpt**

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Spag1* gene. The schematic diagram is as follows:



Technical routes

➢ The *Spag1* gene has 8 transcripts. According to the structure of *Spag1* gene, exon3-exon8 of *Spag1-201* (ENSMUST00000047348.10) transcript is recommended as the knockout region.The region contains 698bp coding sequence. Knock out the region will result in disruption of protein function.

➢ In this project we use CRISPR/Cas9 technology to modify *Spag1* gene. The brief process is as follows: CRISPR/Cas9 system

Notice

- The effect on transcript *Spag1*-206 is unknown.
- Transcript *Spag1*-205&207&208 may not be affected.
- The *Spag1* gene is located on the Chr15. 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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Spag1 sperm associated antigen 1 [*Mus musculus* (house mouse)]

Gene ID: 26942, updated on 12-Nov-2019

Summary

Official Symbol	Spag1 provided by MGI
Official Full Name	sperm associated antigen 1 provided by MGI
Primary source	MGI:MGI:1349387
See related	Ensembl:ENSMUSG00000037617
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	tpis
Expression	Broad expression in cerebellum adult (RPKM 3.6), testis adult (RPKM 2.9) and 22 other tissues See more
Orthologs	human all

Genomic context

Location: 15; 15 B3.1

See Spag1 in Genome Data Viewer

Exon count: 24

Annotation release	Status	Assembly	Chr	Location
108	current	GRCm38.p6 (GCF_000001635.26)	15	NC_000081.6 (36176229..36235621)
Build 37.2	previous assembly	MGSCv37 (GCF_000001635.18)	15	NC_000081.5 (36109285..36164932)

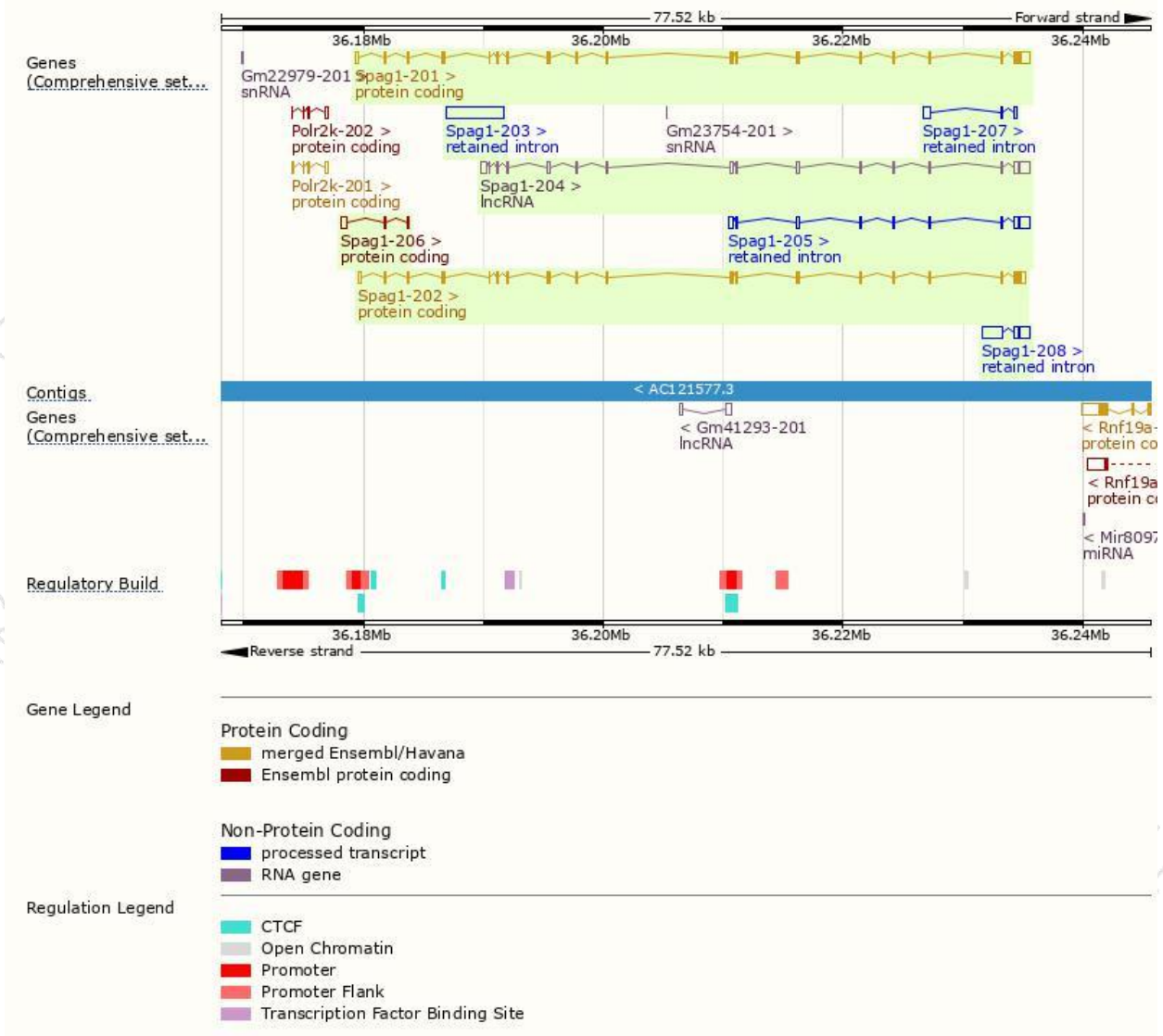
Transcript information（Ensembl）

The gene has 8 transcripts,all transcripts are shown below:

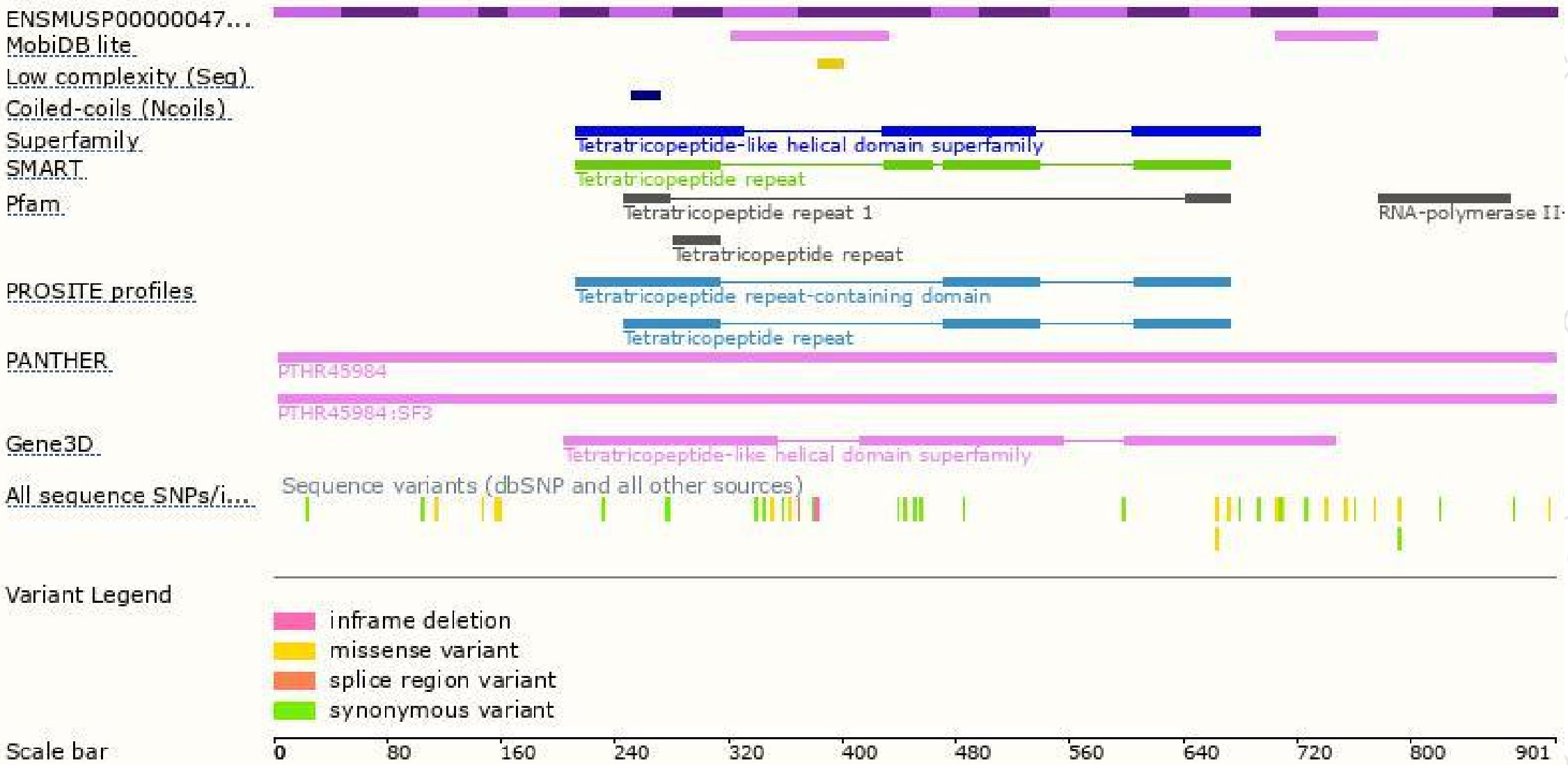
Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Spag1-201	ENSMUST00000047348.10	3646	901aa	Protein coding	CCDS37061	Q80ZX8	TSL:1 GENCODE basic APPRIS P1
Spag1-202	ENSMUST00000171205.2	3219	901aa	Protein coding	CCDS37061	Q80ZX8	TSL:1 GENCODE basic APPRIS P1
Spag1-206	ENSMUST00000227623.1	739	77aa	Protein coding	-	A0A2I3BPL5	CDS 3' incomplete
Spag1-203	ENSMUST00000227436.1	4835	No protein	Retained intron	-	-	
Spag1-208	ENSMUST00000227849.1	2993	No protein	Retained intron	-	-	
Spag1-205	ENSMUST00000227582.1	2388	No protein	Retained intron	-	-	
Spag1-207	ENSMUST00000227715.1	890	No protein	Retained intron	-	-	
Spag1-204	ENSMUST00000227524.1	3446	No protein	lncRNA	-	-	

The strategy is based on the design of *Spag1-201* 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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