Maff Cas9-CKO *Strategy*

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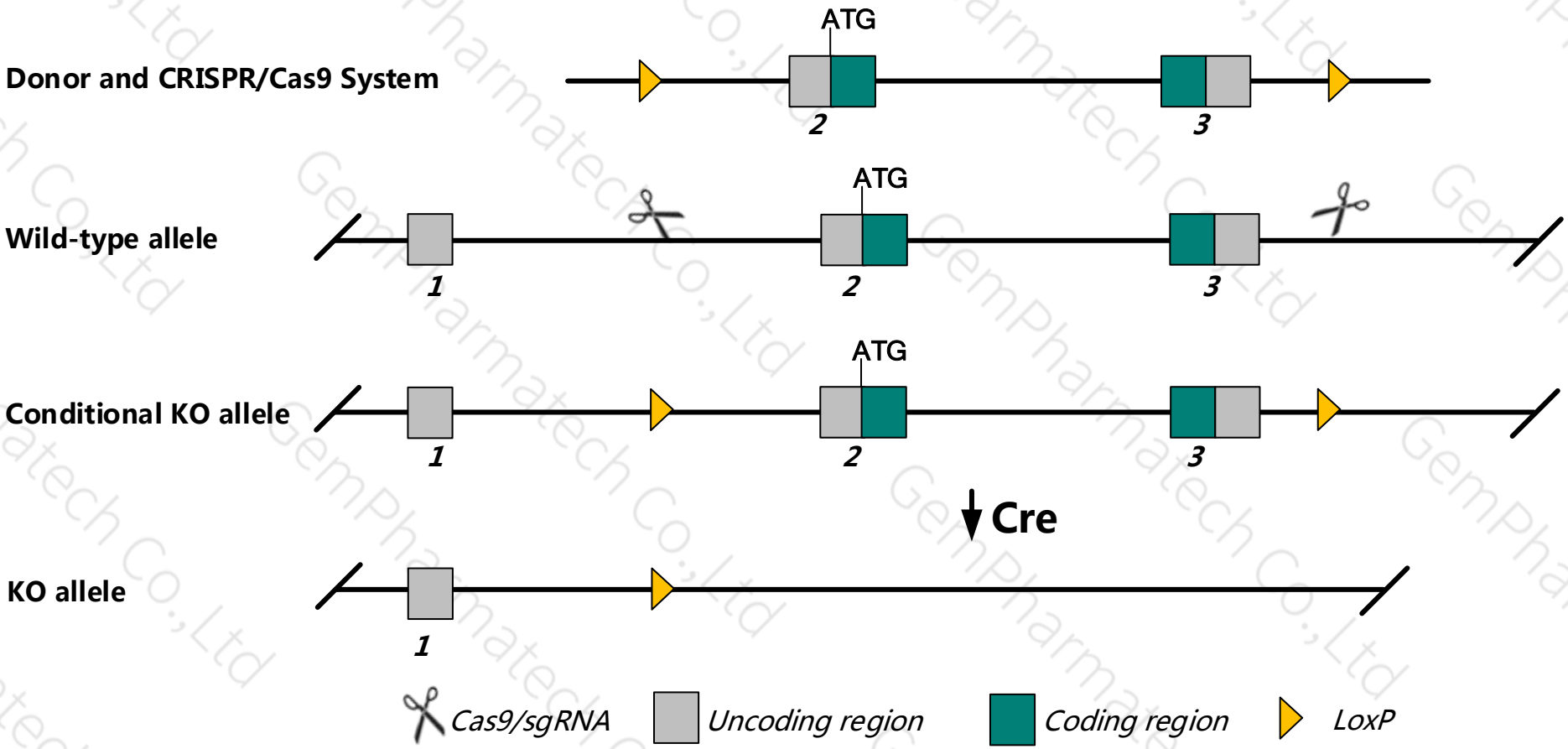
Project Overview

Project Name	***Maff***
Project type	**Cas9-CKO**
Strain background	**C57BL/6JGpt**

Conditional Knockout strategy

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



Technical routes

- The *Maff* gene has 4 transcripts.According to the structure of *Maff* gene, exon2~exon3 of *Maff*-201 (ENSMUST00000096350.10)transcript is recommended as the knockout region.The region contains all the coding sequence.Knock out the region will result in disruption of protein function.

- In this project we use CRISPR/Cas9 technology to modify *Maff* gene. The brief process is as follows: sgRNA was transcribed in vitro, donor vector was constructed.Cas9, sgRNA and Donor 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.

- The flox mice was knocked out after mating with mice expressing Cre recombinase, resulting in the loss of function of the target gene in specific tissues or cell types.

Notice

- According to the existing MGI data，homozygous null mice are viable and fertile and show no obvious functional deficiencies.

- The *Maff* 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 loxp insertion on gene transcription, RNA splicing and protein translation cannot be predicted at the existing technology level.

Gene information （NCBI）

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Maff v-maf musculoaponeurotic fibrosarcoma oncogene family, protein F (avian) [*Mus musculus* (house mouse)]

Gene ID: 17133, updated on 10-Oct-2019

Summary

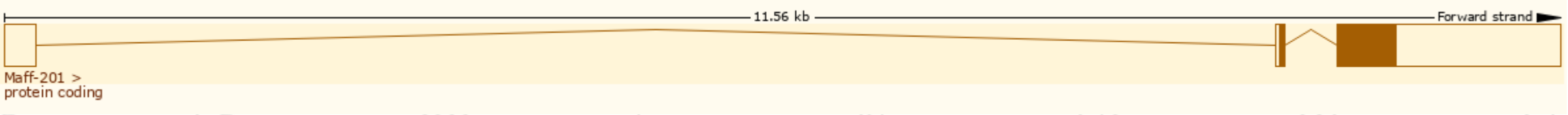
Official Symbol	Maff provided by MGI
Official Full Name	v-maf musculoaponeurotic fibrosarcoma oncogene family, protein F (avian) provided by MGI
Primary source	MGI:MGI:96910
See related	Ensembl:ENSMUSG00000042622
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Expression	Broad expression in small intestine adult (RPKM 12.2), duodenum adult (RPKM 12.0) and 23 other tissues See more
Orthologs	human all

Transcript information（Ensembl）

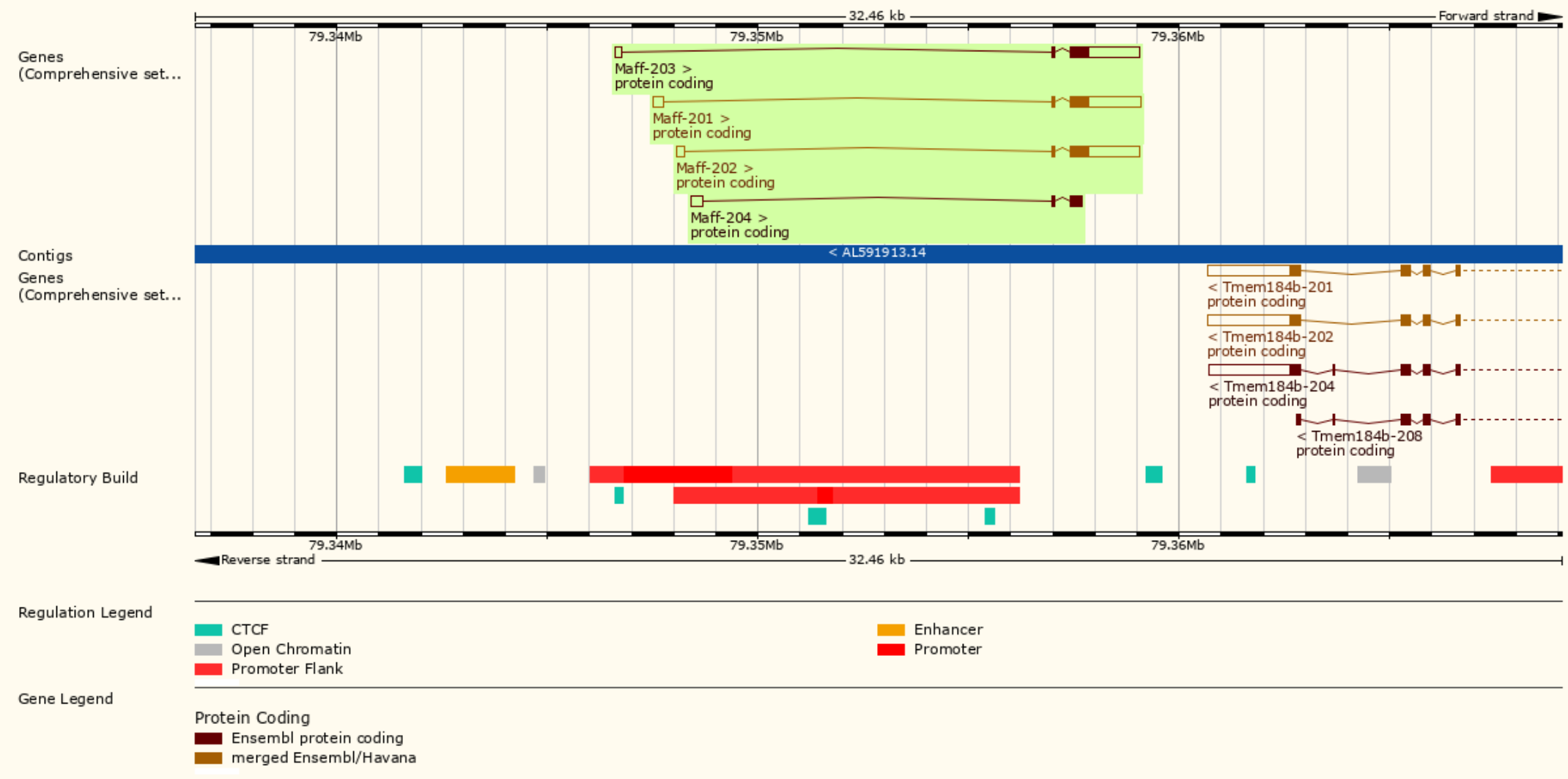
The gene has 4 transcripts, and all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Maff-201	ENSMUST00000096350.10	1958	156aa	Protein coding	CCDS27638	O54791 Q3U0G5	TSL:1 GENCODE basic APPRIS P1
Maff-202	ENSMUST00000163691.2	1902	156aa	Protein coding	CCDS27638	O54791 Q3U0G5	TSL:1 GENCODE basic APPRIS P1
Maff-203	ENSMUST00000229130.1	1873	156aa	Protein coding	CCDS27638	O54791 Q3U0G5	GENCODE basic APPRIS P1
Maff-204	ENSMUST00000229285.1	633	101aa	Protein coding	-	A0A2R8VHY0	CDS 3' incomplete

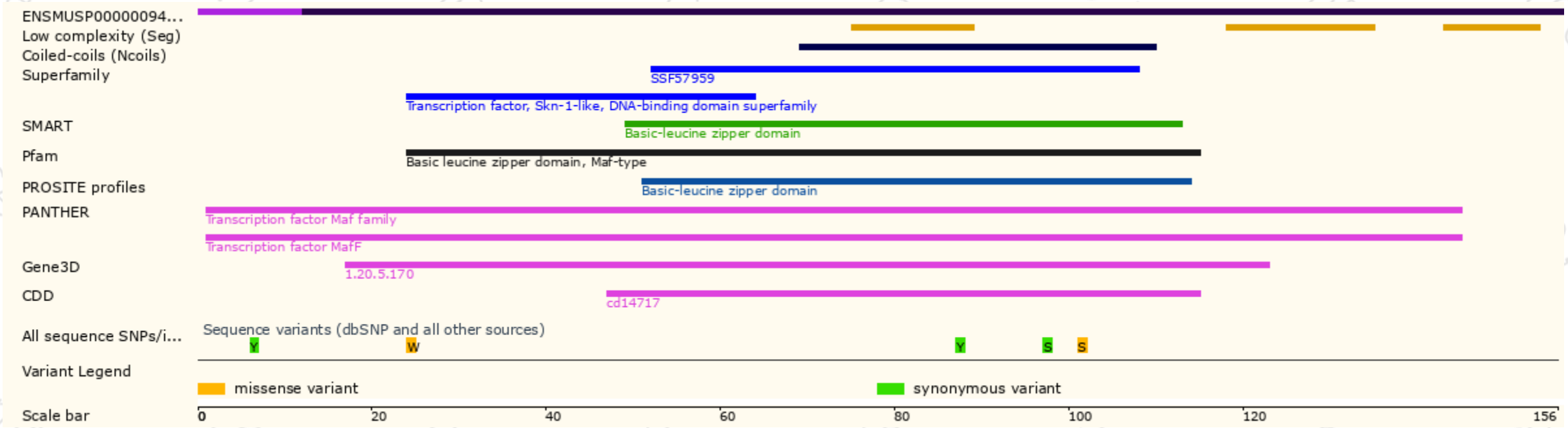
The strategy is based on the design of *Maff-201* transcript, the transcription is shown below:



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, homozygous null mice are viable and fertile and show no obvious functional deficiencies.

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

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