Dnah9 Cas9-CKO Strategy

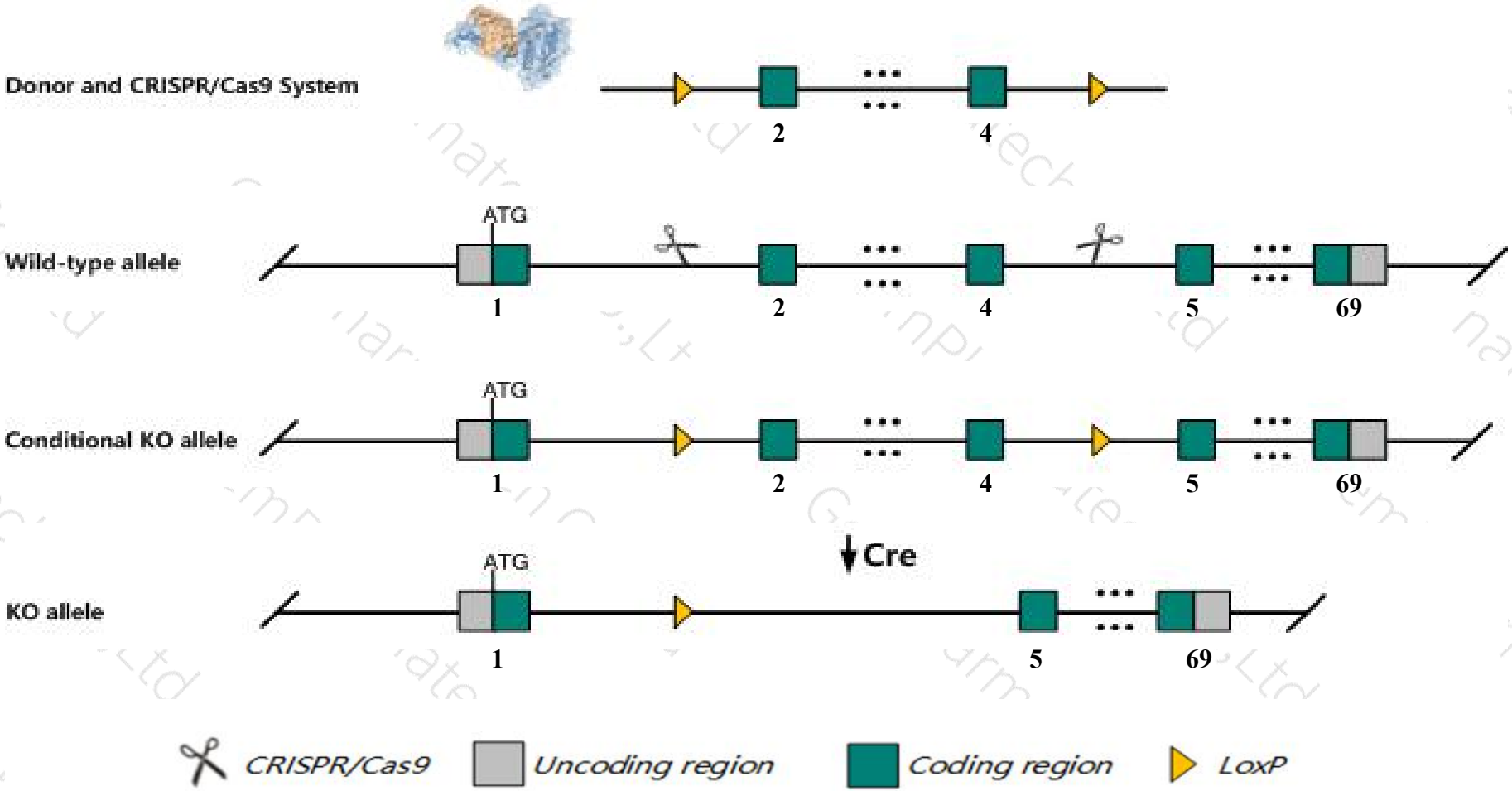
Designer: Yanhua Shen
Reviewer：Xueting Zhang
Design Date: 2020-2-24

Project Overview

Project Name	***Dnah9***
Project type	**Cas9-CKO**
Strain background	**C57BL/6JGpt**

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Dnah9* gene. The schematic diagram is as follows:



Technical routes

- The *Dnah9* gene has 6 transcripts. According to the structure of *Dnah9* gene, exon2-exon4 of *Dnah9-201* (ENSMUST00000080665.9) transcript is recommended as the knockout region.The region contains 487bp coding sequence. Knock out the region will result in disruption of protein function.

- In this project we use CRISPR/Cas9 technology to modify *Dnah9* gene. The brief process is as follows:CRISPR/Cas9 system 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 will be knocked out after mating with mice expressing Cre recombinase, resulting in the loss of function of the target gene in specific tissues and cell types.

Notice

➢Transcript 204 may not be affected. The effect of transcripts 203,206 is unknown.

➢The *Dnah9* gene is located on the Chr11. 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 loxp insertion on gene transcription, RNA splicing and protein translation cannot be predicted at existing technological level.

Gene information （NCBI）

集萃药康 GemPharmatech

Dnah9 dynein, axonemal, heavy chain 9 [*Mus musculus* (house mouse)]

Gene ID: 237806, updated on 10-Oct-2019

Summary

Official Symbol	Dnah9 provided by MGI
Official Full Name	dynein, axonemal, heavy chain 9 provided by MGI
Primary source	MGI:MGI:1289279
See related	Ensembl:ENSMUSG00000056752
Gene type	protein coding
RefSeq status	PROVISIONAL
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	Dnahc9; mKIAA0357; 9030022M04; A230091C01; C230051G16; D11Ertd686e
Expression	Low expression observed in reference dataset See more
Orthologs	human all

Genomic context

Location: 11 B3; 11 40.53 cM

See Dnah9 in Genome Data Viewer

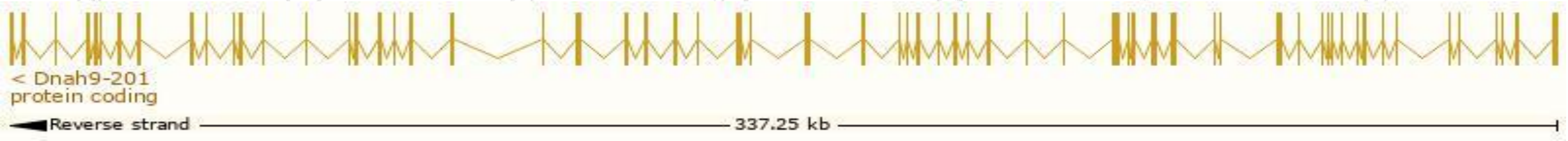
Exon count: 69

Transcript information（Ensembl）

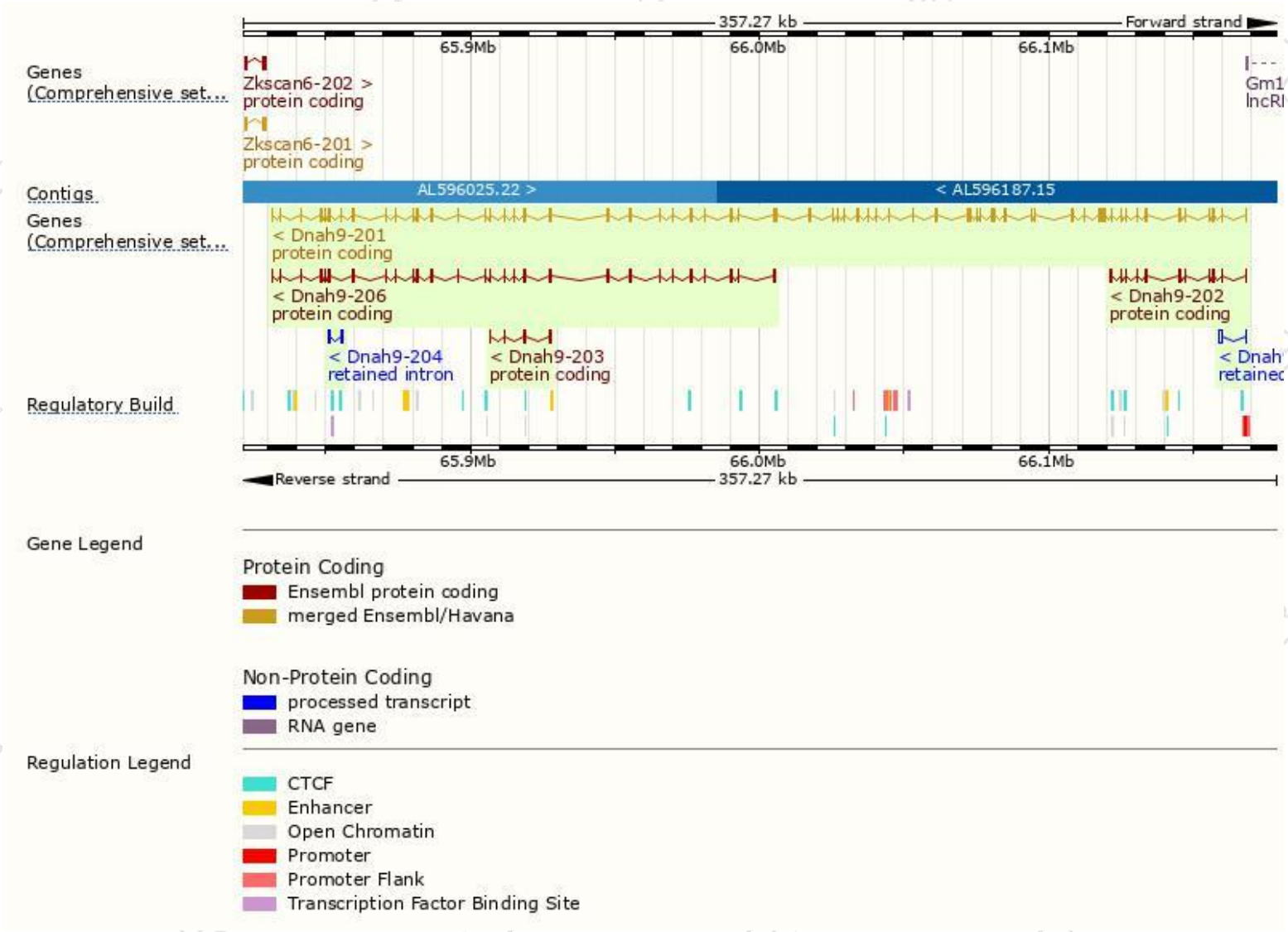
The gene has 6 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Dnah9-201	ENSMUST00000080665.9	13798	4484aa	Protein coding	CCDS36182	B1AR51	TSL:5 GENCODE basic APPRIS P1
Dnah9-206	ENSMUST00000152386.7	6031	1958aa	Protein coding	-	F7DC70	CDS 5' incomplete TSL:5
Dnah9-202	ENSMUST00000108691.1	2671	457aa	Protein coding	-	Q5SX07	TSL:1 GENCODE basic
Dnah9-203	ENSMUST00000130739.1	837	279aa	Protein coding	-	B7FAT5	5' and 3' truncations in transcript evidence prevent annotation of the start and the end of the CDS. CDS 5' and 3' incomplete TSL:5
Dnah9-205	ENSMUST00000142836.1	1797	No protein	Retained intron	-	-	TSL:1
Dnah9-204	ENSMUST00000136124.1	532	No protein	Retained intron	-	-	TSL:5

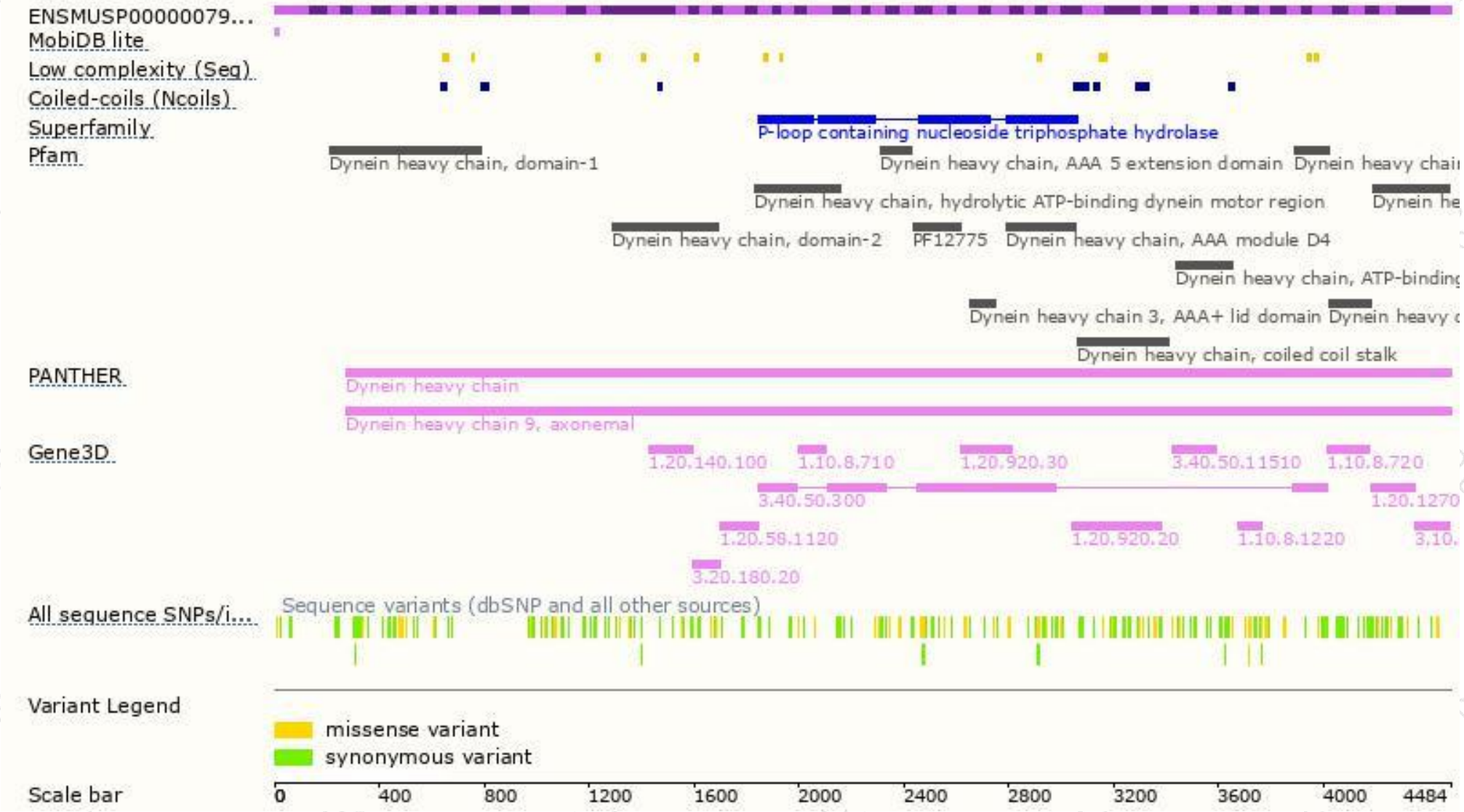
The strategy is based on the design of *Dnah9-201* transcript,The transcription is shown below



Genomic location distribution



Protein domain



集萃药康
GemPharmatech

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

Tel: 400-9660890

集萃药康生物科技
GemPharmatech Co.,Ltd