Ccnf Cas9-KO Strategy

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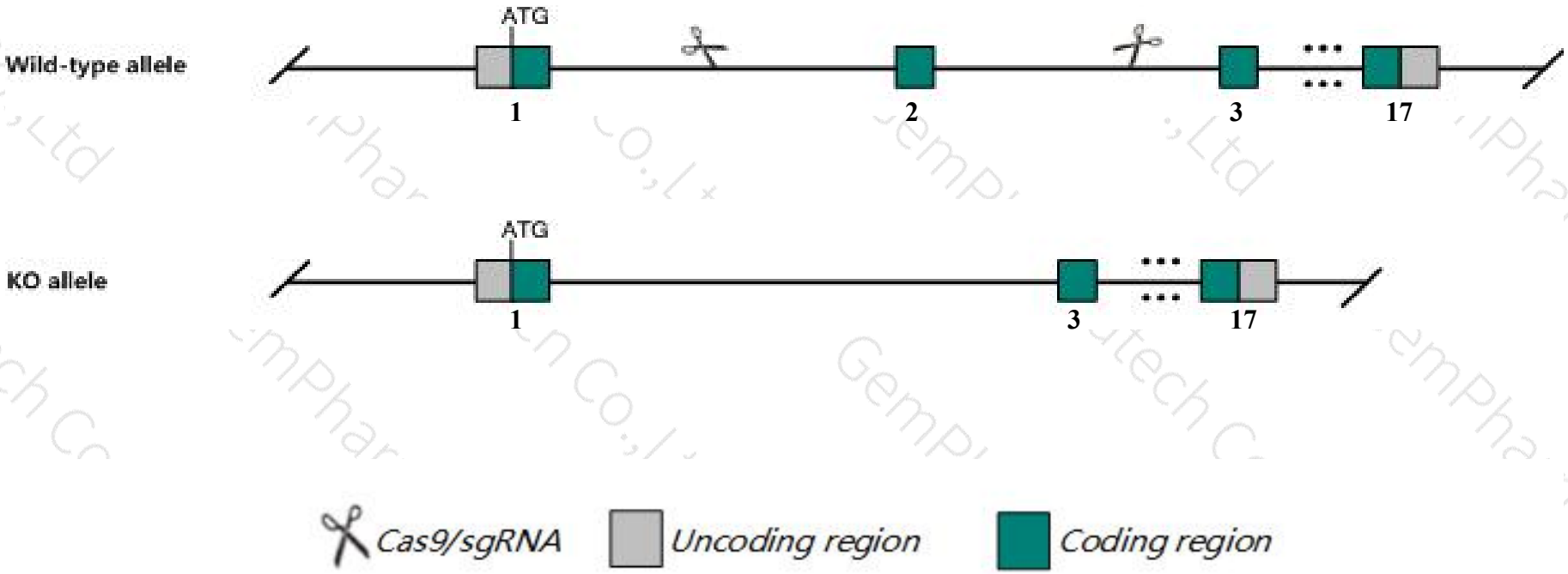
Design Date: 2019-8-2

Project Overview

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

Knockout strategy

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



Technical routes

➢ The *Ccnf* gene has 10 transcripts. According to the structure of *Ccnf* gene, exon2 of *Ccnf-201* (ENSMUST00000115390.4) transcript is recommended as the knockout region.The region contains 155bp coding sequence. Knock out the region will result in disruption of protein function.

➢ In this project we use CRISPR/Cas9 technology to modify *Ccnf* gene. The brief process is as follows: sgRNA was transcribed in vitro.Cas9 and sgRNA 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,Homozygous mutation of this gene results in embryonic lethality between E9.5 and E10.5 due to defects in yolk sac and chorioallantoic placenta maturation. Embryos show incomplete turning, underdeveloped posterior structures, neural tube closure and braindefects. MEFs have cell cycle defects.

- Transcript *Ccnf*-202&205&209 may not be affected.

- The *Ccnf* gene is located on the Chr17. 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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Ccnf cyclin F [Mus musculus (house mouse)]

Gene ID: 12449, updated on 3-Feb-2019

Summary

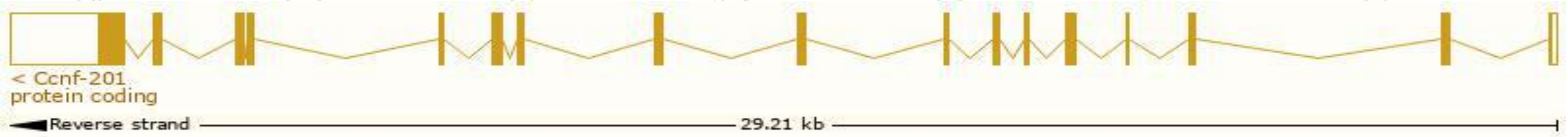
Official Symbol	Ccnf provided by MGI
Official Full Name	cyclin F provided by MGI
Primary source	MGI:MGI:102551
See related	Ensembl:ENSMUSG00000072082
Gene type	protein coding
RefSeq status	PROVISIONAL
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	CycF, Fbxo1
Expression	Broad expression in liver E14.5 (RPKM 29.9), thymus adult (RPKM 27.8) and 18 other tissues See more
Orthologs	human all

Transcript information（Ensembl）

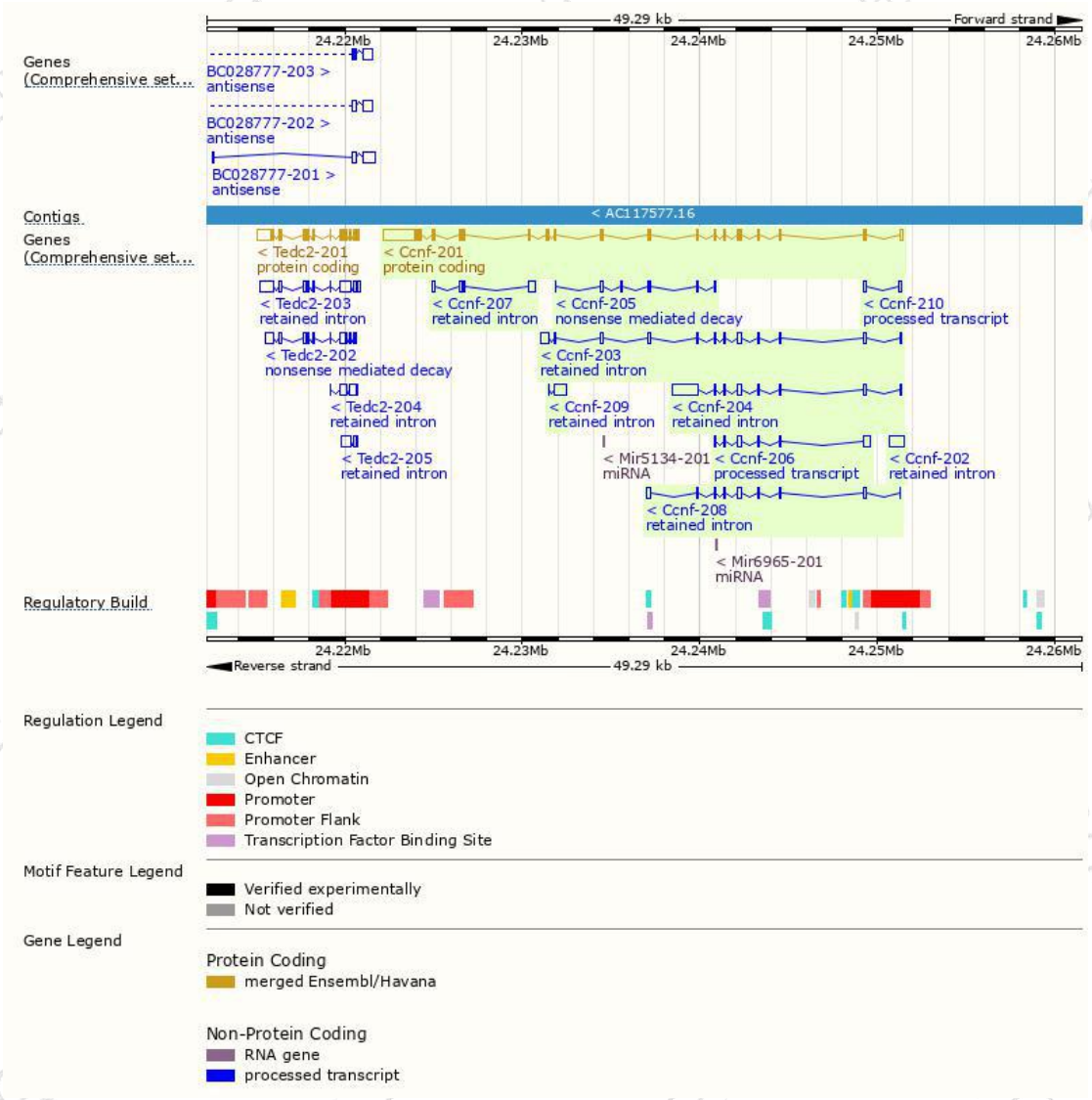
The gene has 10 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Ccnf-201	ENSMUST00000115390.4	4133	777aa	Protein coding	CCDS37484	P51944	TSL:1 GENCODE basic APPRIS P1
Ccnf-205	ENSMUST00000234541.1	675	124aa	Nonsense mediated decay	-	-	CDS 5' incomplete
Ccnf-206	ENSMUST00000234708.1	825	No protein	Processed transcript	-	-	
Ccnf-210	ENSMUST00000235059.1	317	No protein	Processed transcript	-	-	
Ccnf-204	ENSMUST00000234491.1	2222	No protein	Retained intron	-	-	
Ccnf-203	ENSMUST00000234381.1	1721	No protein	Retained intron	-	-	
Ccnf-208	ENSMUST00000234916.1	1045	No protein	Retained intron	-	-	
Ccnf-202	ENSMUST00000234096.1	777	No protein	Retained intron	-	-	
Ccnf-207	ENSMUST00000234837.1	756	No protein	Retained intron	-	-	
Ccnf-209	ENSMUST00000234949.1	756	No protein	Retained intron	-	-	

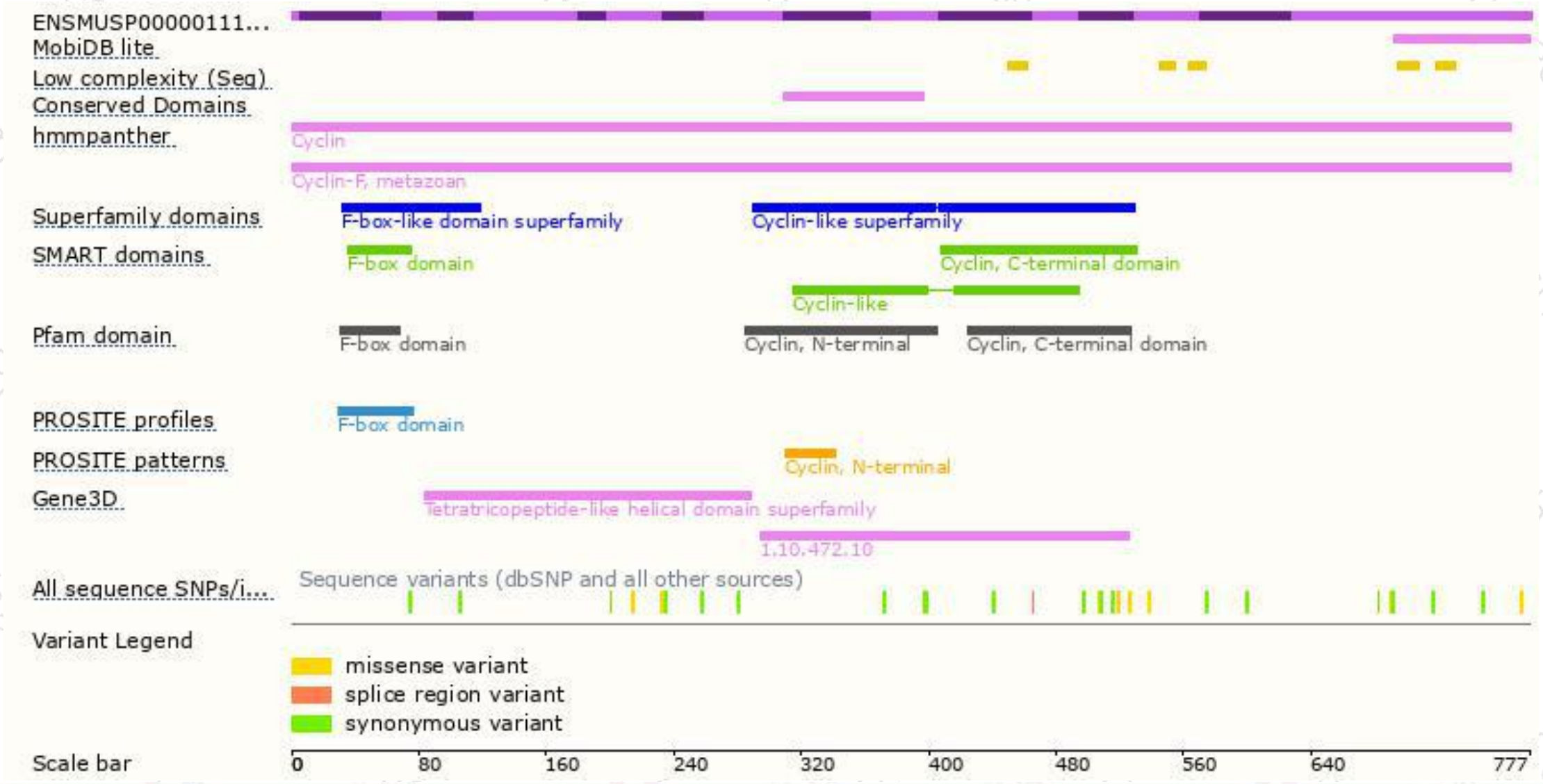
The strategy is based on the design of *Ccnf-201* transcript,The transcription is shown below



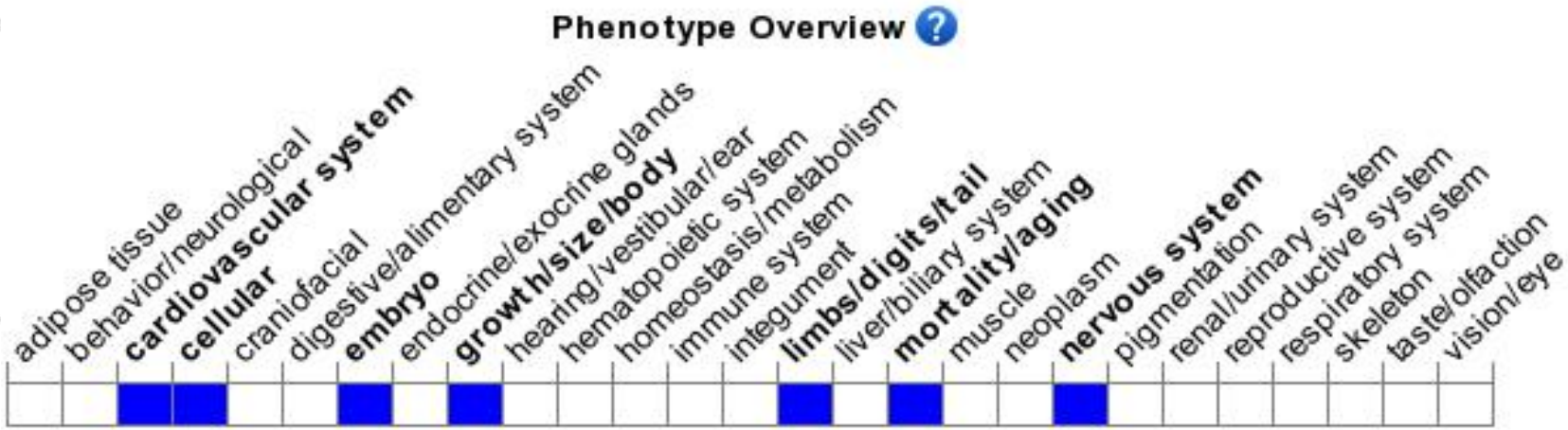
Genomic location distribution



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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