Kmt2c Cas9-CKO Strategy

Designer: Xiaojing Li
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Reviewer: JiaYu

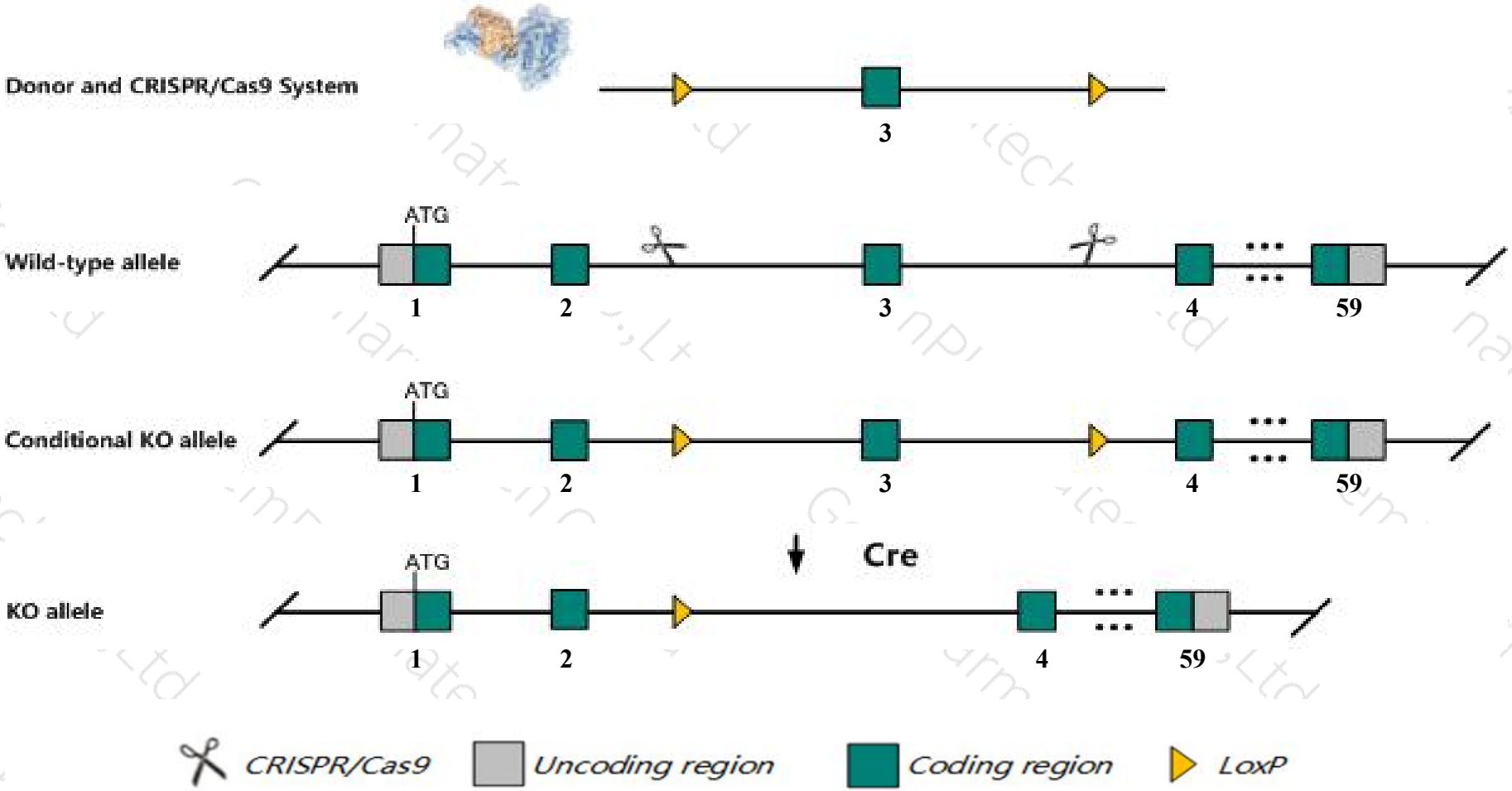
集萃药康 GemPharmatech
GemPharmatech Co.,Ltd

Project Overview

Project Name	***Kmt2c***
Project type	**Cas9-CKO**
Strain background	**C57BL/6JGpt**

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Kmt2c* gene. The schematic diagram is as follows:



Technical routes

- The *Kmt2c* gene has 8 transcripts. According to the structure of *Kmt2c* gene, exon3 of *Kmt2c-201* (ENSMUST00000045291.13) transcript is recommended as the knockout region.The region contains 139bp coding sequence. Knock out the region will result in disruption of protein function.

- In this project we use CRISPR/Cas9 technology to modify *Kmt2c* 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

- According to the existing MGI data,Mice homozygous for a knock-out allele display partial embryonic lethality, delayed eyelid opening, postnatal growth retardation, impaired fertility in both sexes, and decreased proliferation of cultured mouse embryonic fibroblasts.

- The *Kmt2c* gene is located on the Chr5. 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）

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Kmt2c lysine (K)-specific methyltransferase 2C [Mus musculus (house mouse)]

Gene ID: 231051, updated on 31-Jan-2019

Summary

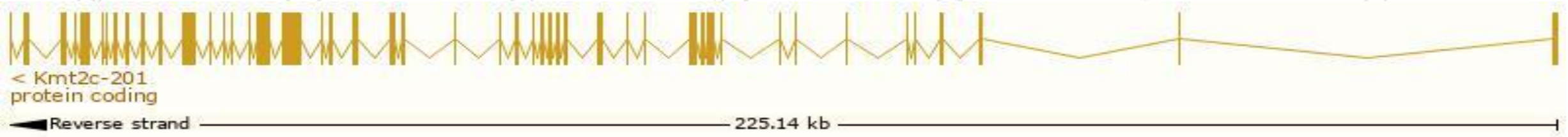
Official Symbol	Kmt2c provided by MGI
Official Full Name	lysine (K)-specific methyltransferase 2C provided by MGI
Primary source	MGI:MGI:2444959
See related	Ensembl:ENSMUSG00000038056
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	E330008K23Rik, HALR, Mll3
Expression	Ubiquitous expression in thymus adult (RPKM 7.3), whole brain E14.5 (RPKM 6.9) and 28 other tissues See more
Orthologs	human all

Transcript information（Ensembl）

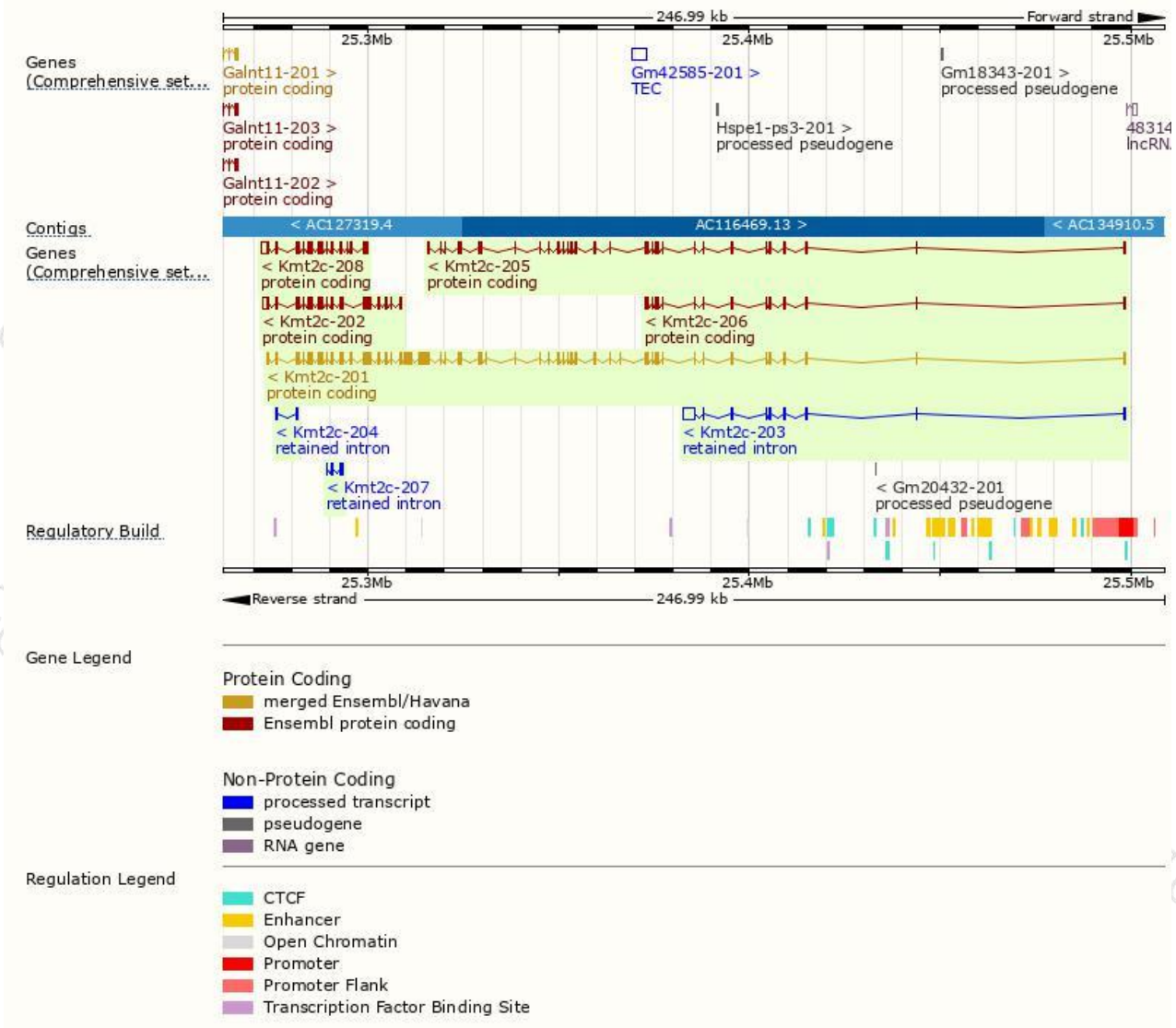
The gene has 8 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Kmt2c-201	ENSMUST00000045291.13	14967	4904aa	Protein coding	CCDS39033	F8WI37	TSL:5 GENCODE basic APPRIS P1
Kmt2c-202	ENSMUST00000172556.7	6486	1748aa	Protein coding	-	G3UY45	CDS 5' incomplete TSL:5
Kmt2c-208	ENSMUST00000174734.7	6443	1524aa	Protein coding	-	G3UWZ3	CDS 5' incomplete TSL:5
Kmt2c-205	ENSMUST00000173073.7	5301	1716aa	Protein coding	-	G3UZC8	CDS 3' incomplete TSL:5
Kmt2c-206	ENSMUST00000173174.1	2646	813aa	Protein coding	-	G3UWI5	CDS 3' incomplete TSL:1
Kmt2c-203	ENSMUST00000172626.1	4542	No protein	Retained intron	-	-	TSL:1
Kmt2c-207	ENSMUST00000173673.1	857	No protein	Retained intron	-	-	TSL:2
Kmt2c-204	ENSMUST00000172707.1	612	No protein	Retained intron	-	-	TSL:2

The strategy is based on the design of *Kmt2c-201* transcript,The transcription is shown below

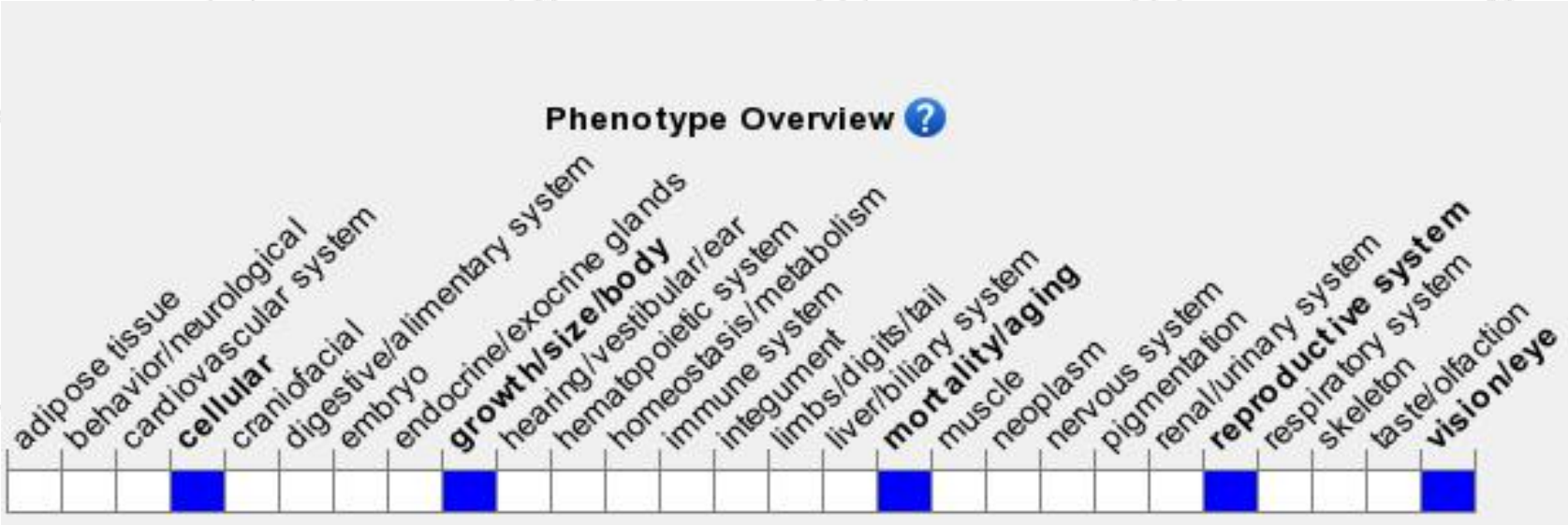


Genomic location distribution



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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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

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