Cd44 Cas9-KO Strategy

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Project Overview

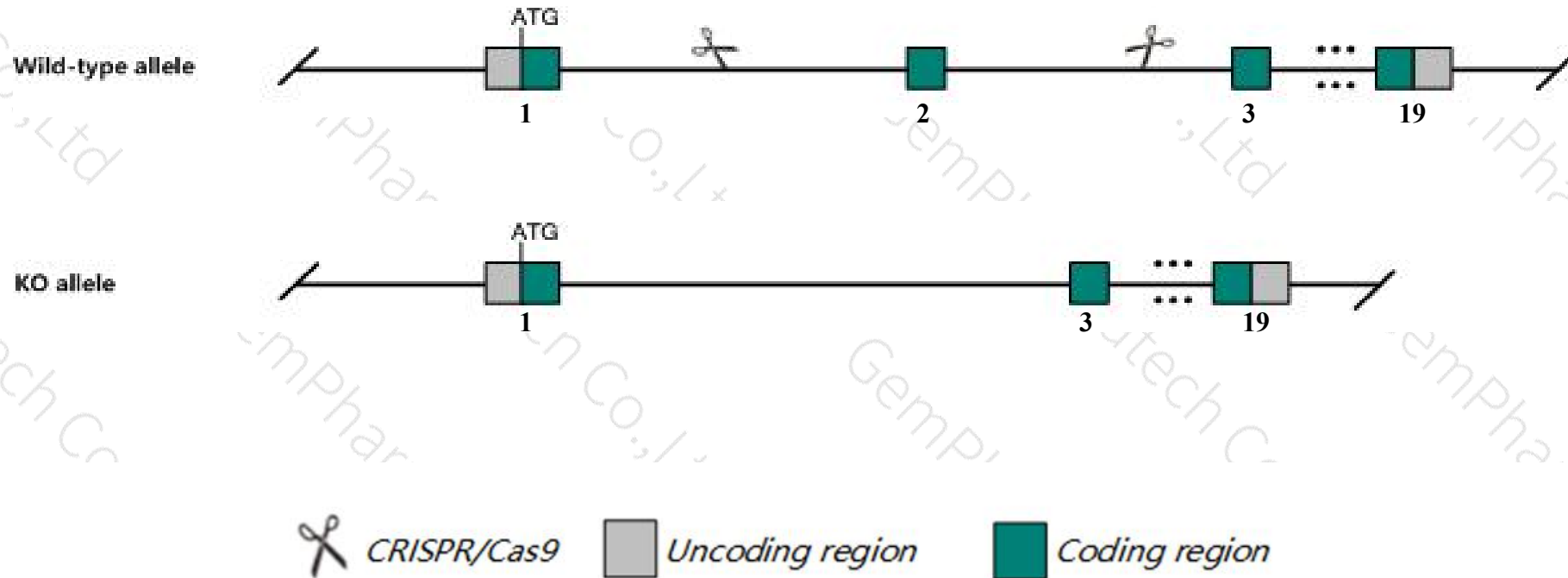|	
Project Name	*Cd44*
Project type	**Cas9-KO**
Strain background	**C57BL/6JGpt**

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Cd44* gene. The schematic diagram is as follows:

Technical routes

➢ The *Cd44* gene has 9 transcripts. According to the structure of *Cd44* gene, exon2 of *Cd44-201* (ENSMUST00000005218.14) transcript is recommended as the knockout region.The region contains 166bp coding sequence. Knock out the region will result in disruption of protein function.

➢ In this project we use CRISPR/Cas9 technology to modify *Cd44* gene. The brief process is as follows: CRISPR/Cas9 system w

➢ According to the existing MGI data,Homozygotes for targeted null mutations exhibit impaired T lymphocyte trafficking resulting in muted inflammatory responses, altered myeloid progenitor distribution, reduced growth of tumors, and impaired uterine involution and maintenance of lactation.

➢ The *Cd44* gene is located on the Chr2. 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）

Cd44 CD44 antigen [Mus musculus (house mouse)]
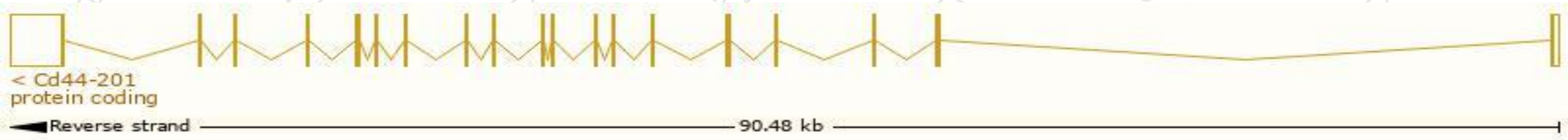
Gene ID: 12505, updated on 25-Mar-2019

▲ Summary

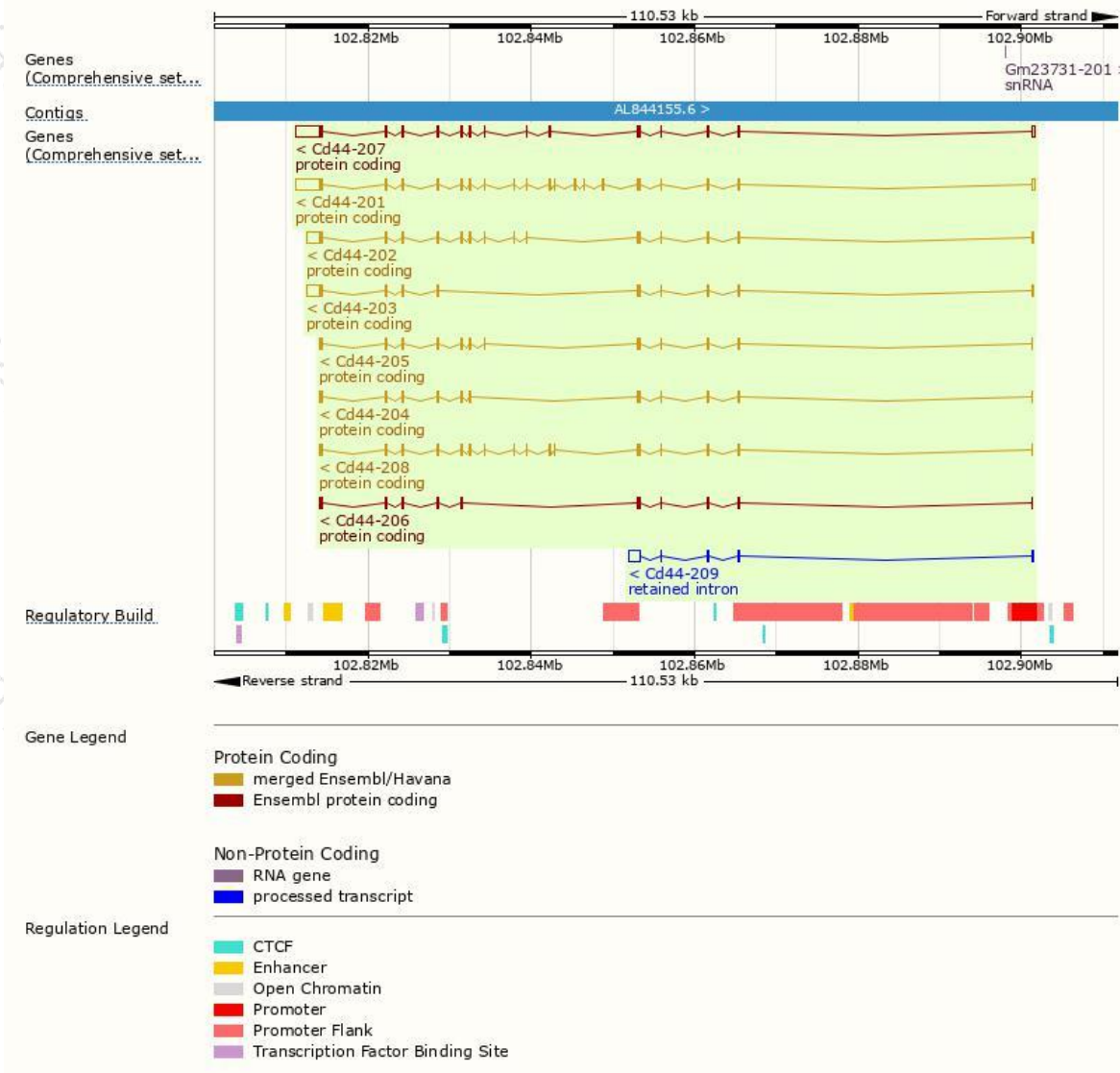|	
Official Symbol	Cd44 provided by MGI
Official Full Name	CD44 antigen provided by MGI
Primary source	MGI:MGI:88338
See related	Ensembl:ENSMUSG00000005087
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	AU023126, AW121933, AW146109, HERMES, Ly-24, Pgp-1
Expression	Broad expression in lung adult (RPKM 13.1), spleen adult (RPKM 8.5) and 23 other tissuesSee more
Orthologs	human all

Transcript information（Ensembl）

The gene has 9 transcripts,all transcripts are shown below:

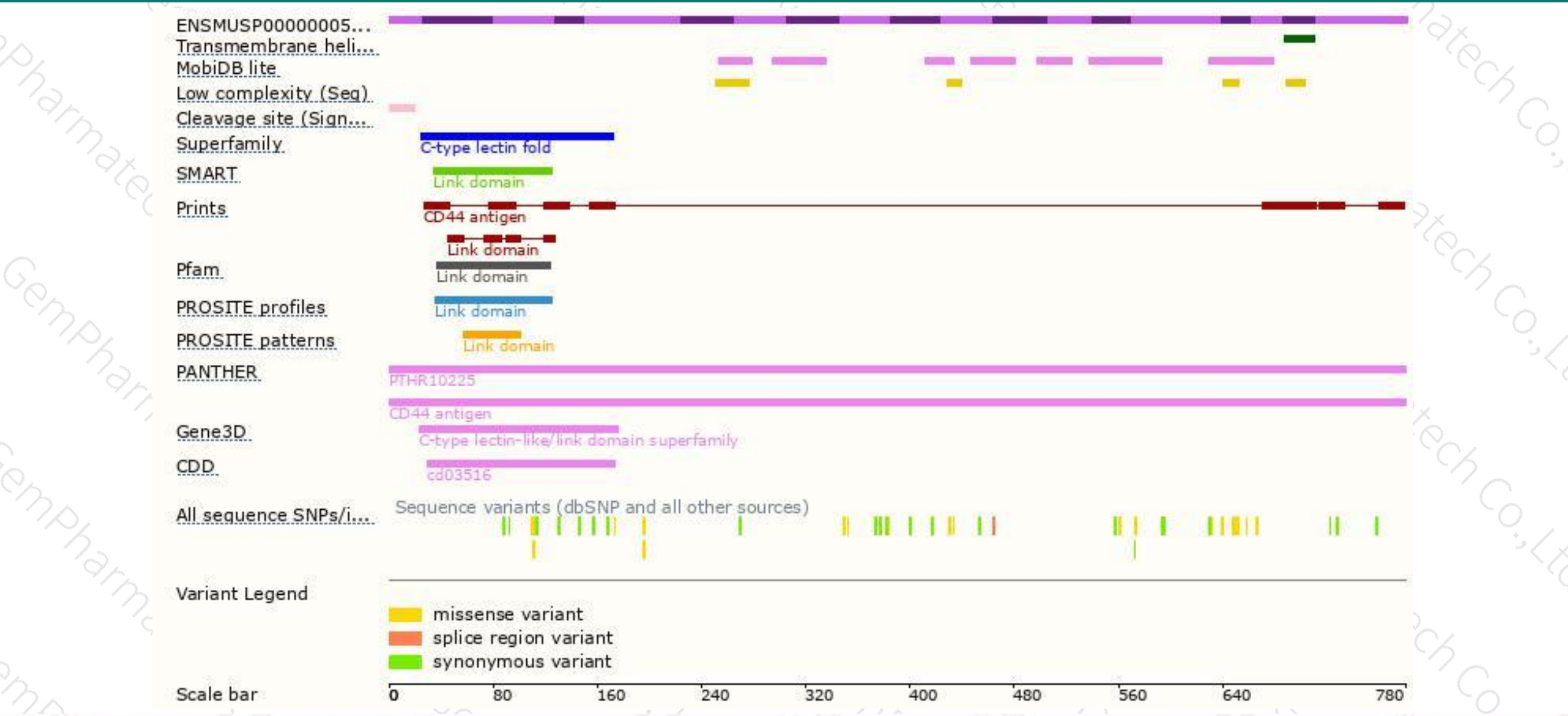| Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Cd44-201	ENSMUST00000005218.14	5614	780aa	Protein coding	CCDS16472	A2APM2	TSL:1 GENCODE basic APPRIS P4
Cd44-202	ENSMUST00000060516.13	3495	580aa	Protein coding	CCDS16470	Q80X37	TSL:1 GENCODE basic APPRIS ALT2
Cd44-203	ENSMUST00000099673.8	2848	365aa	Protein coding	CCDS16471	Q3U8S1	TSL:1 GENCODE basic APPRIS ALT2
Cd44-208	ENSMUST00000111198.8	1981	657aa	Protein coding	CCDS50650	A2APM1	TSL:1 GENCODE basic APPRIS ALT2
Cd44-205	ENSMUST00000111191.8	1533	498aa	Protein coding	CCDS50649	A2APM4	TSL:1 GENCODE basic APPRIS ALT2
Cd44-204	ENSMUST00000111190.8	1412	464aa	Protein coding	CCDS50648	A2APM3	TSL:1 GENCODE basic APPRIS ALT2
Cd44-207	ENSMUST00000111194.7	5045	577aa	Protein coding	-	E9QKM8	TSL:5 GENCODE basic APPRIS ALT2
Cd44-206	ENSMUST00000111192.2	1305	434aa	Protein coding	-	A2APM5	TSL:5 GENCODE basic APPRIS ALT2
Cd44-209	ENSMUST00000124624.1	1907	No protein	Retained intron	-	-	TSL:1

The strategy is based on the design of *Cd44-201* transcript,The transcription is shown below

< Cd44-201
protein coding

◄━━ Reverse strand

90.48 kb

Genomic location distribution

Protein domain

Mouse phenotype description(MGI)

Phenotype Overview

adipose tissue / behavior/neurological / cardiovascular system / cellular / craniofacial / digestive/alimentary system / embryo / endocrine/exocrine glands / growth/size/body / hearing/vestibular/ear / hematopoietic system / homeostasis/metabolism / immune system / integument / limbs/digits/tail / liver/biliary system / mortality/aging / muscle / neoplasm / nervous system / pigmentation / renal/urinary system / reproductive system / respiratory system / skeleton / taste/olfaction / vision/eye

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,Homozygotes for targeted null mutations exhibit impaired T lymphocyte trafficking resulting in muted inflammatory responses, altered myeloid progenitor distribution, reduced growth of tumors, and impaired uterine involution and maintenance of lactation.

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