Ubr1 Cas9-KO Strategy

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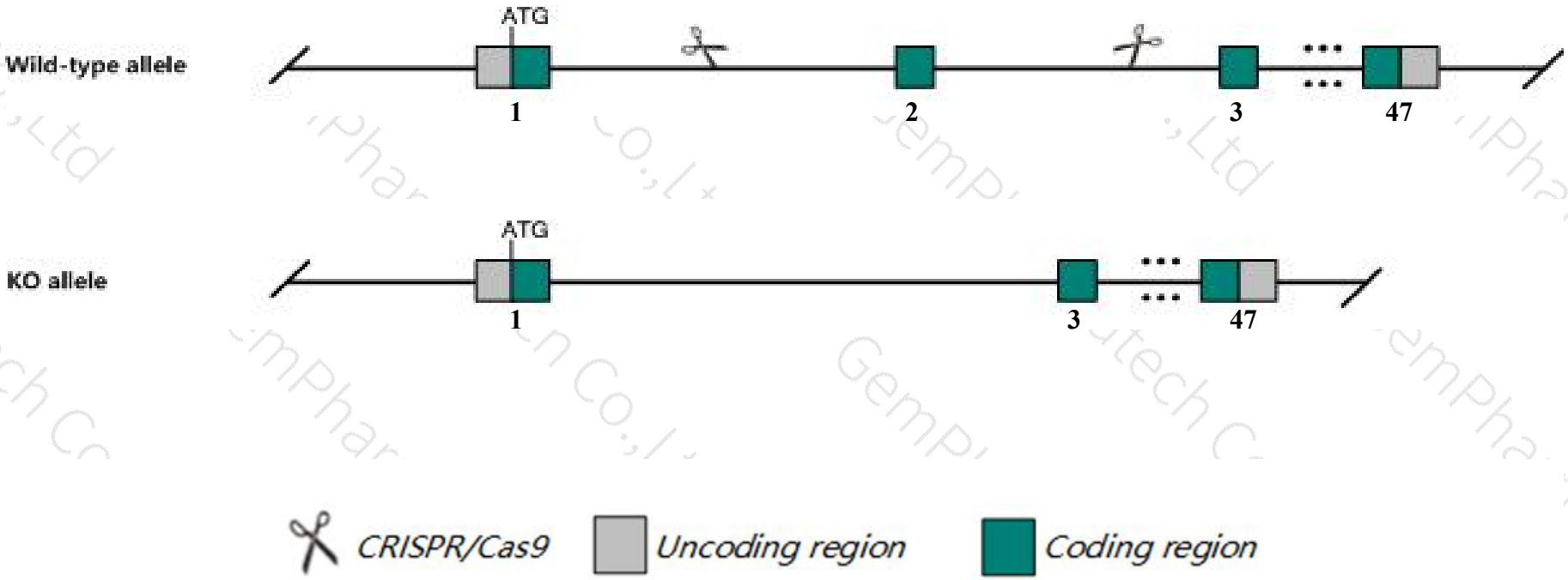
Design Date: 2020-2-12

Project Overview

Project Name	***Ubr1***
Project type	**Cas9-KO**
Strain background	**C57BL/6JGpt**

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Ubr1* gene. The schematic diagram is as follows:



Technical routes

➢ The *Ubr1* gene has 7 transcripts. According to the structure of *Ubr1* gene, exon2 of *Ubr1-201* (ENSMUST00000028728.5) transcript is recommended as the knockout region.The region contains 257bp coding sequence. Knock out the region will result in disruption of protein function.

➢ In this project we use CRISPR/Cas9 technology to modify *Ubr1* gene. The brief process is as follows: CRISPR/Cas9 system

Notice

- According to the existing MGI data,Homozygous null mutants have 20% lower body weight and reduced muscle and adipose tissue. Skeletal muscle lacks a mechanism for targeting proteins for rapid catabolism. Aberrant regulation of fatty acid synthase upon starvation is also observed.

- The *Ubr1* 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）

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Ubr1 ubiquitin protein ligase E3 component n-recognin 1 [Mus musculus (house mouse)]

Gene ID: 22222, updated on 31-Jan-2019

Summary

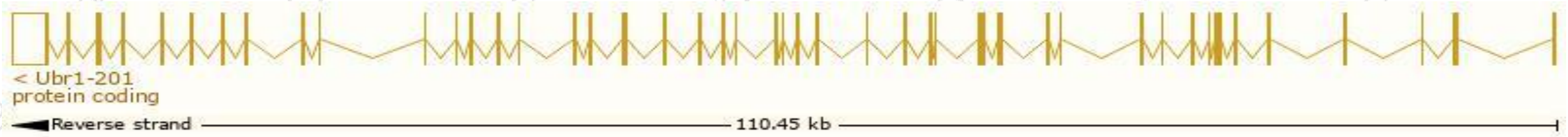
Official Symbol	Ubr1 provided by MGI
Official Full Name	ubiquitin protein ligase E3 component n-recognin 1 provided by MGI
Primary source	MGI:MGI:1277977
See related	Ensembl:ENSMUSG00000027272
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	AI504731
Expression	Ubiquitous expression in CNS E11.5 (RPKM 5.7), CNS E18 (RPKM 5.5) and 28 other tissues See more
Orthologs	human all

Transcript information（Ensembl）

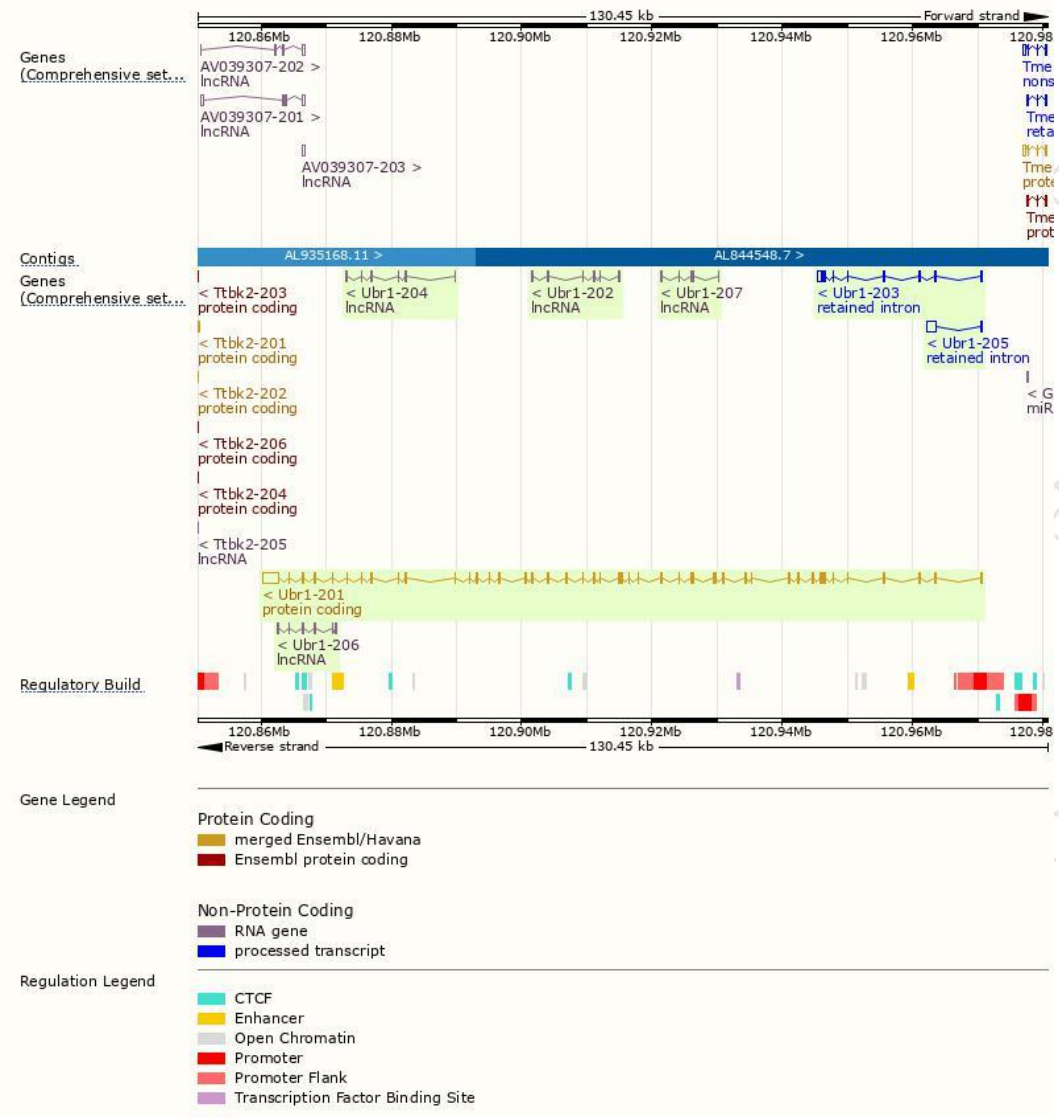
The gene has 7 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Ubr1-201	ENSMUST00000028728.5	7768	1757aa	Protein coding	CCDS16628	O70481	TSL:1 GENCODE basic APPRIS P1
Ubr1-205	ENSMUST00000138824.1	1678	No protein	Retained intron	-	-	TSL:1
Ubr1-203	ENSMUST00000133408.1	1480	No protein	Retained intron	-	-	TSL:1
Ubr1-206	ENSMUST00000153868.1	822	No protein	lncRNA	-	-	TSL:3
Ubr1-202	ENSMUST00000129790.1	762	No protein	lncRNA	-	-	TSL:5
Ubr1-204	ENSMUST00000135891.1	710	No protein	lncRNA	-	-	TSL:3
Ubr1-207	ENSMUST00000154023.1	516	No protein	lncRNA	-	-	TSL:5

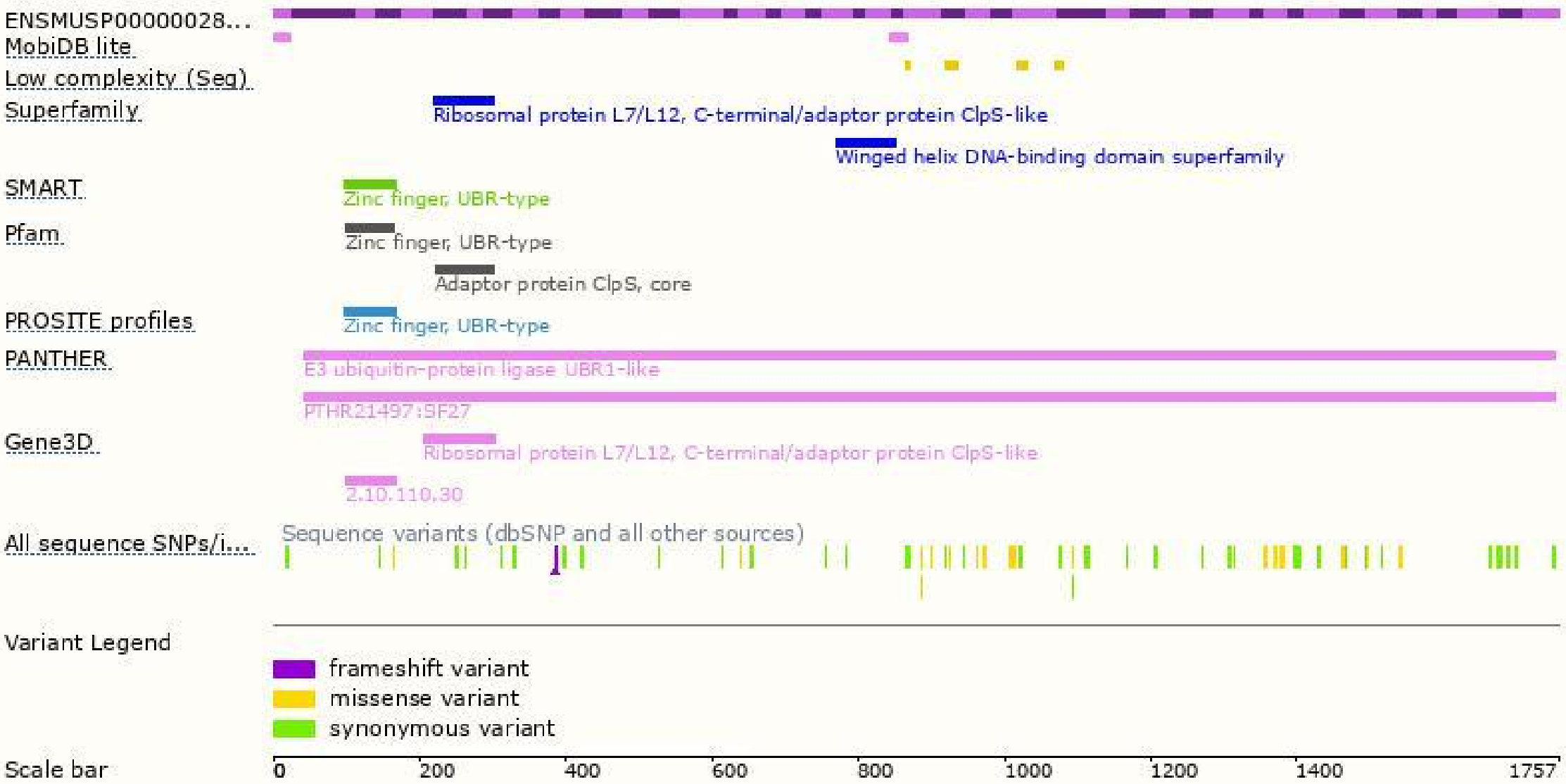
The strategy is based on the design of *Ubr1-201* transcript,The transcription is shown below



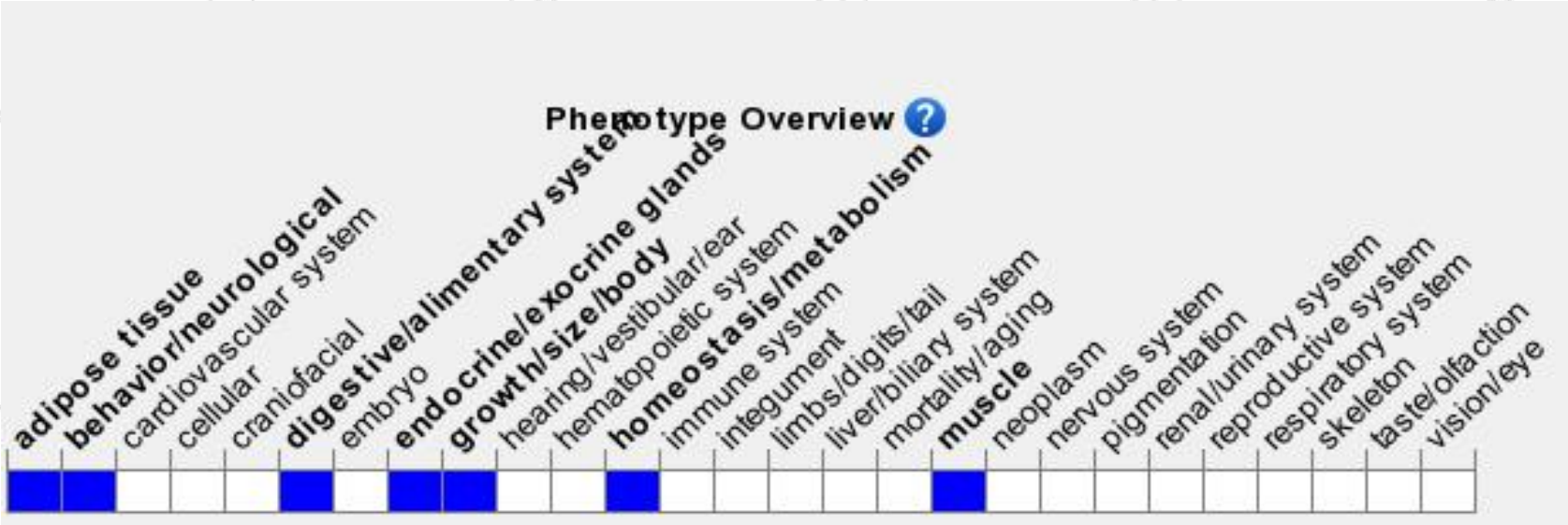
Genomic location distribution



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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