Oscar Cas9-KO Strategy

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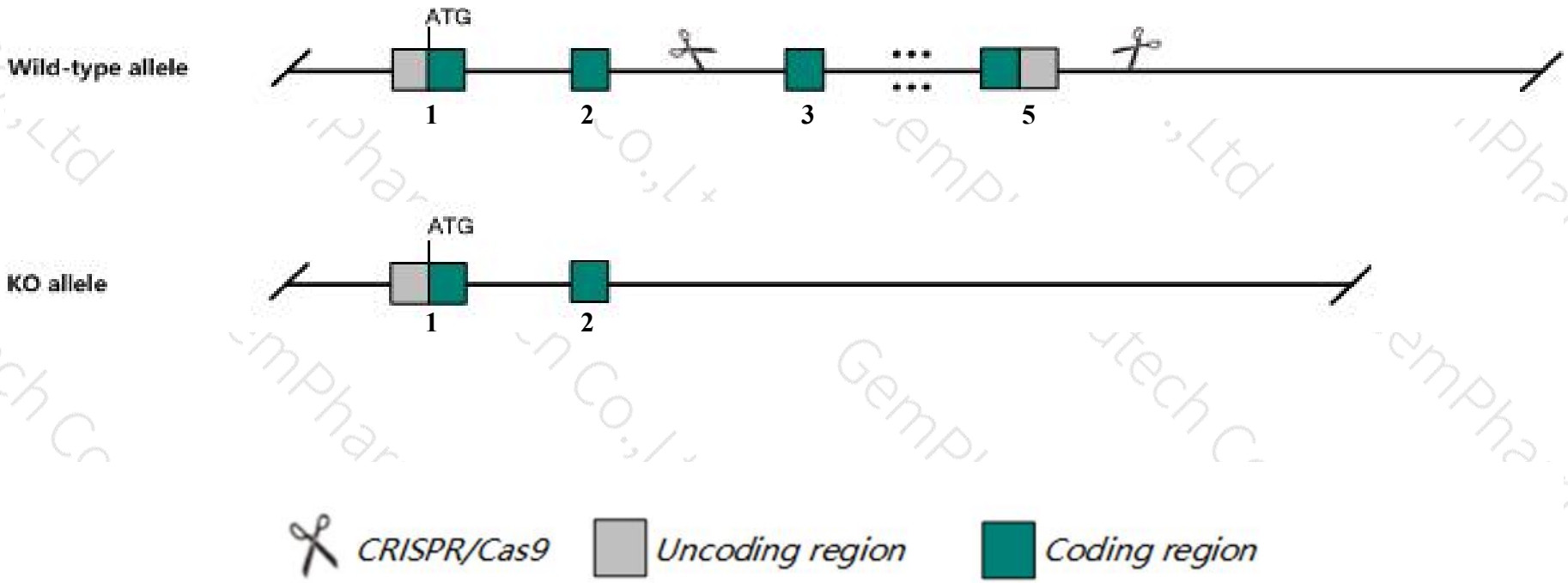
Design Date: 2020-2-26

Project Overview

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

Knockout strategy

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



Technical routes

➢ The *Oscar* gene has 4 transcripts. According to the structure of *Oscar* gene, exon3-exon5 of *Oscar-202* (ENSMUST00000108645.7) transcript is recommended as the knockout region.The region contains 728bp coding sequence. Knock out the region will result in disruption of protein function.

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

Notice

- According to the existing MGI data,Bone marrow macrophage from mice homozygous for a knock-out allele exhibit impaired osteoclast differentiation.

- The *Oscar* gene is located on the Chr7. 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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Oscar osteoclast associated receptor [Mus musculus (house mouse)]

Gene ID: 232790, updated on 31-Jan-2019

Summary

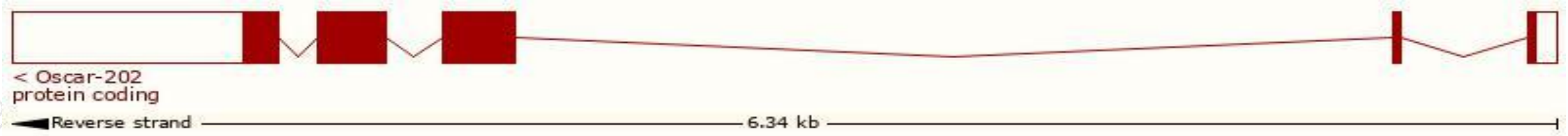
Official Symbol	Oscar provided by MGI
Official Full Name	osteoclast associated receptor provided by MGI
Primary source	MGI:MGI:2179720
See related	Ensembl:ENSMUSG00000054594
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	mOSCAR, mOSCAR-M1, mOSCAR-M2, mOSCAR-M3
Expression	Broad expression in frontal lobe adult (RPKM 1.4), testis adult (RPKM 1.4) and 19 other tissues See more
Orthologs	human all

Transcript information（Ensembl）

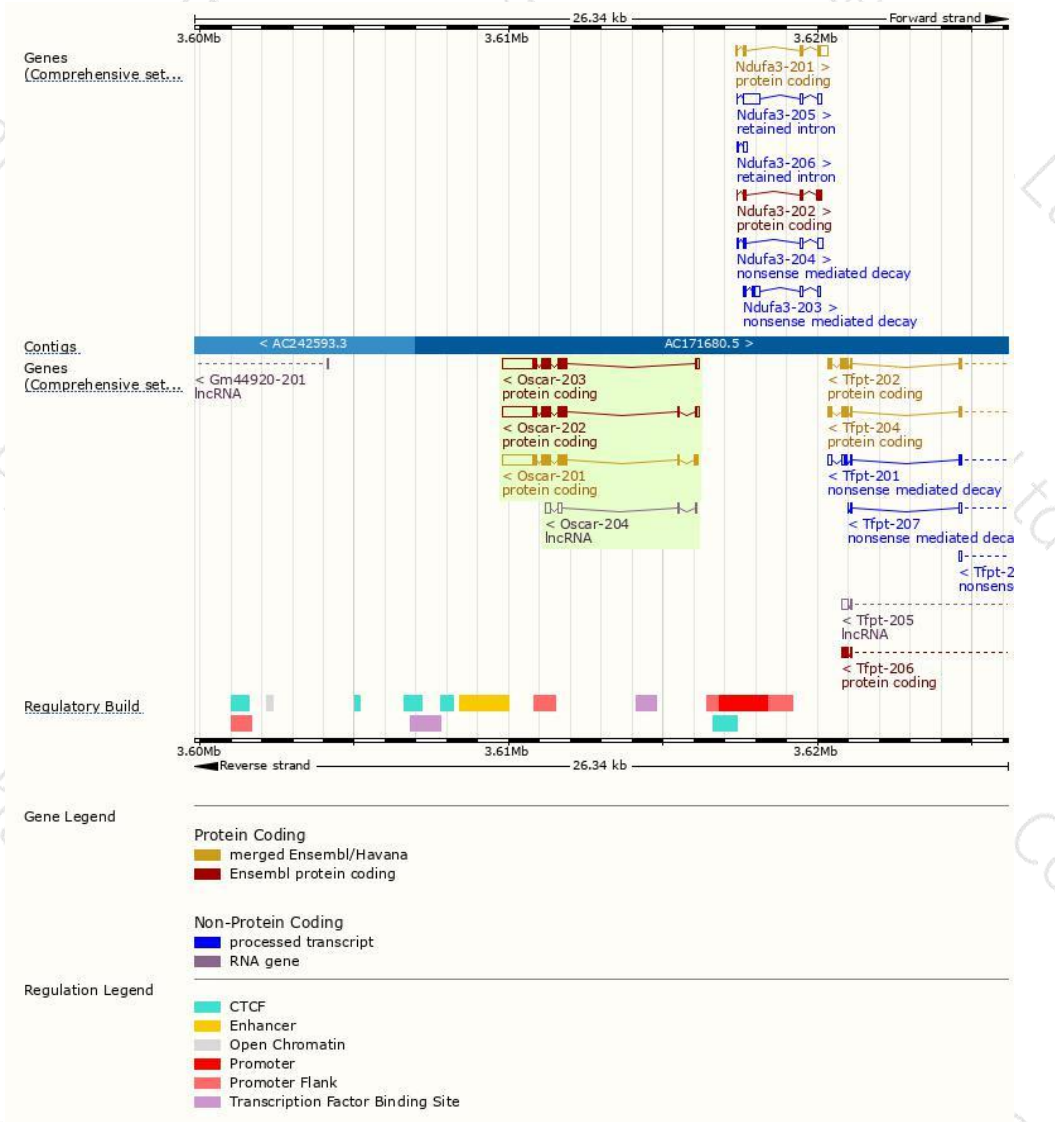
The gene has 4 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Oscar-202	ENSMUST00000108645.7	1829	265aa	Protein coding	CCDS71872	Q8VBT3	TSL:1 GENCODE basic APPRIS ALT2
Oscar-201	ENSMUST00000039507.14	1823	271aa	Protein coding	CCDS20718	Q8VBT3	TSL:1 GENCODE basic APPRIS P3
Oscar-203	ENSMUST00000148012.1	1796	254aa	Protein coding	-	D3YXX9	TSL:5 GENCODE basic APPRIS ALT2
Oscar-204	ENSMUST00000148645.1	388	No protein	lncRNA	-	-	TSL:5

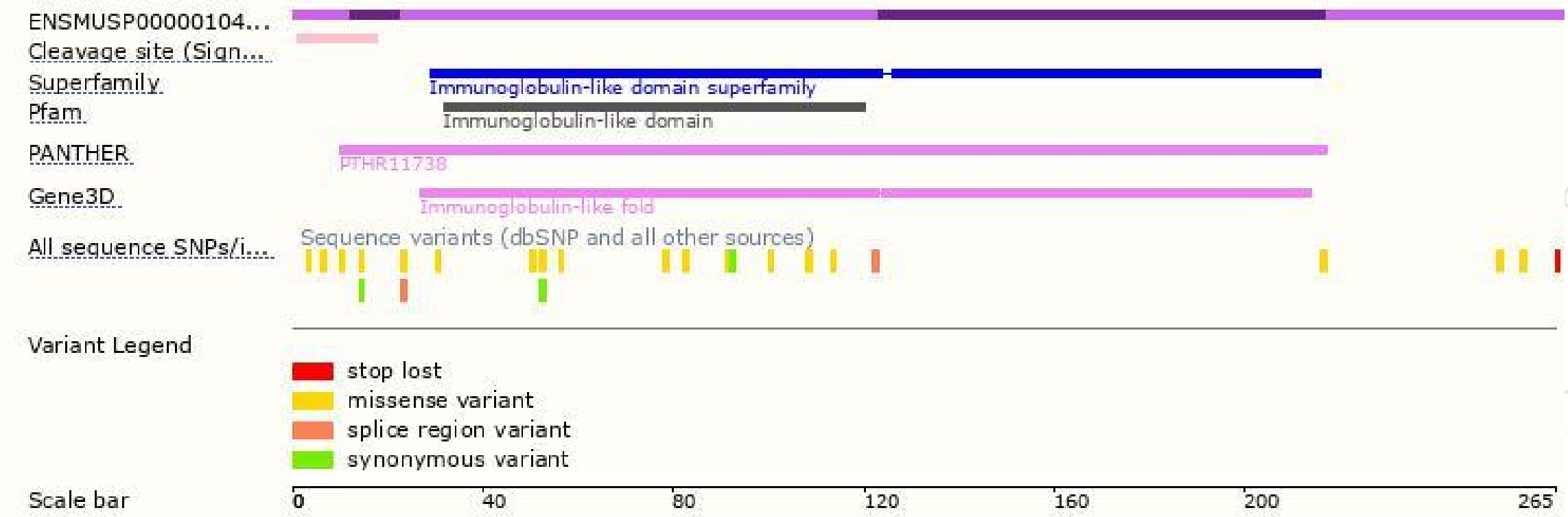
The strategy is based on the design of *Oscar-202* transcript,The transcription is shown below



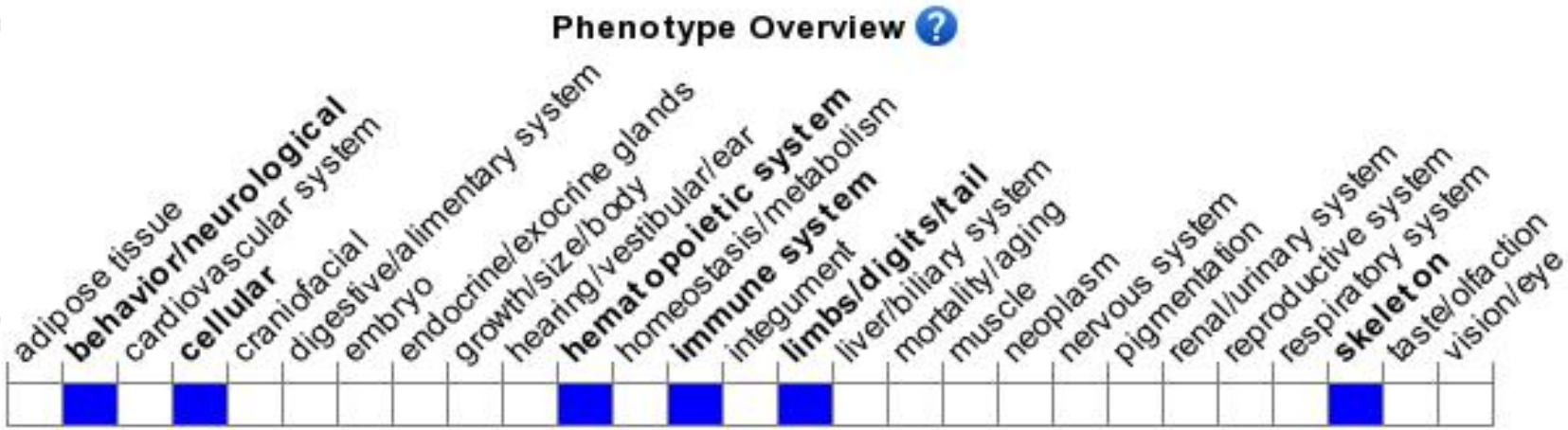
Genomic location distribution



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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