Scarf2 Cas9-CKO Strategy

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Project Overview

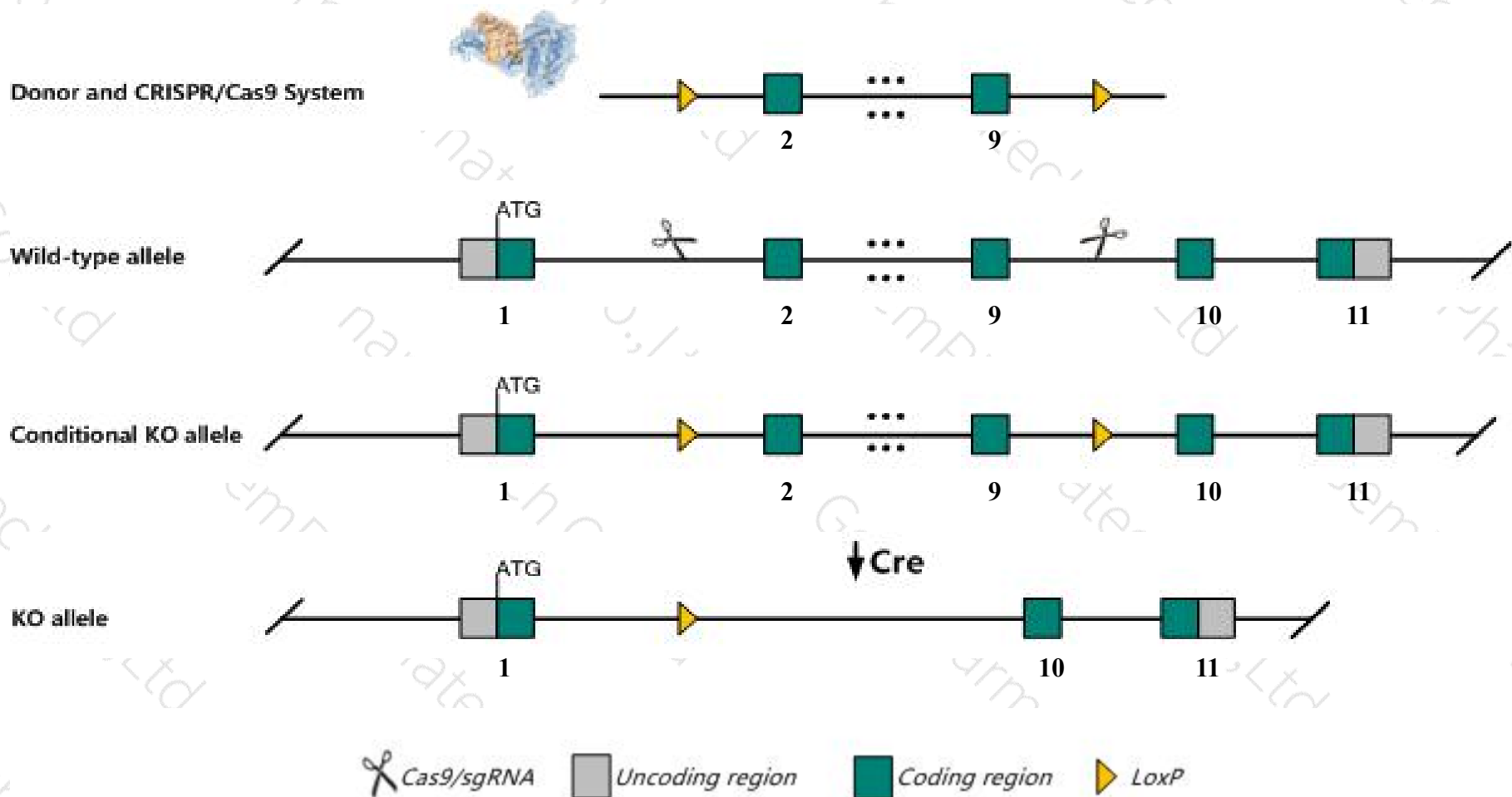|	
Project Name	*Scarf2*
Project type	**Cas9-CKO**
Strain background	**C57BL/6JGpt**

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Scarf2* gene. The schematic diagram is as follows:

Technical routes

➢ The *Scarf2* gene has 5 transcripts. According to the structure of *Scarf2* gene, exon2-exon9 of *Scarf2-201*(ENSMUST00000012161.4) transcript is recommended as the knockout region.The region contains 1367bp coding sequence. Knock out the region will result in disruption of protein function.

➢ In this project we use CRISPR/Cas9 technology to modify *Scarf2* gene. The brief process is as follows:sgRNA was transcribed in vitro, donor vector was constructed.Cas9, sgRNA 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 was 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

➢ The *Scarf2* gene is located on the Chr16. 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）

Scarf2 scavenger receptor class F, member 2 [Mus musculus (house mouse)]

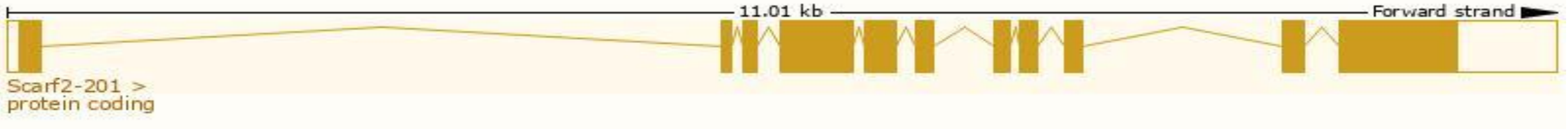Gene ID: 224024, updated on 20-Mar-2020

Summary

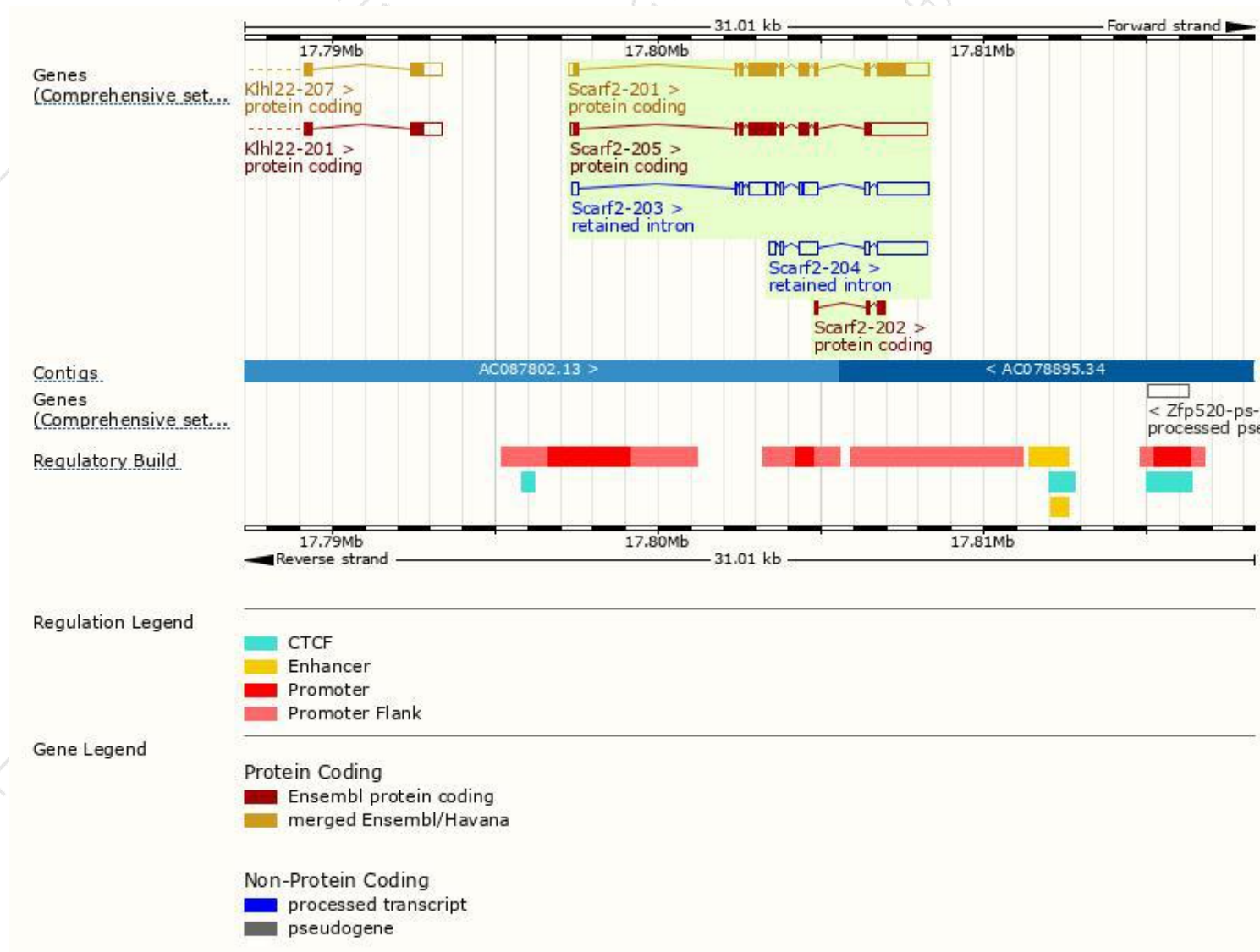|	
Official Symbol	Scarf2 provided by MGI
Official Full Name	scavenger receptor class F, member 2 provided by MGI
Primary source	MGI:MGI:1858430
See related	Ensembl:ENSMUSG00000012017
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	NSR1, SREC-II, SRECRP-1, Scatf1, Srec2, SrecII
Expression	Broad expression in lung adult (RPKM 105.4), ovary adult (RPKM 99.7) and 17 other tissuesSee more
Orthologs	human all

Transcript information（Ensembl）

The gene has 5 transcripts,all transcripts are shown below:

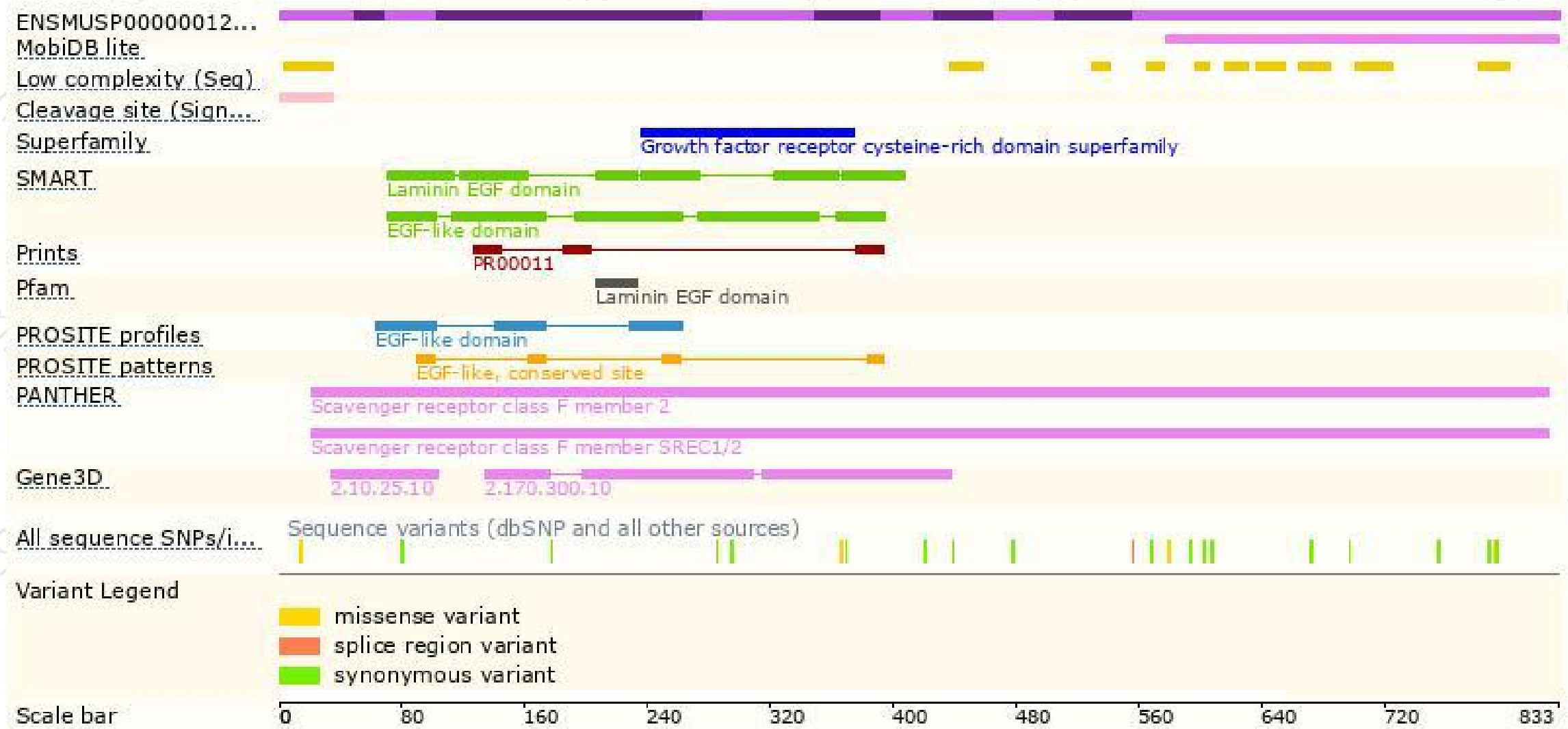| Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Scarf2-201	ENSMUST00000012161.4	3308	833aa	Protein coding	CCDS28010	P59222 Q58A84	TSL:1 GENCODE basic APPRIS P2
Scarf2-205	ENSMUST00000232577.1	3522	566aa	Protein coding	-	A0A338P7B2	GENCODE basic APPRIS ALT2
Scarf2-202	ENSMUST00000231301.1	422	141aa	Protein coding	-	A0A338P7B0	CDS 5' and 3' incomplete
Scarf2-203	ENSMUST00000231329.1	3445	No protein	Retained intron	-	-	
Scarf2-204	ENSMUST00000231383.1	2641	No protein	Retained intron	-	-	

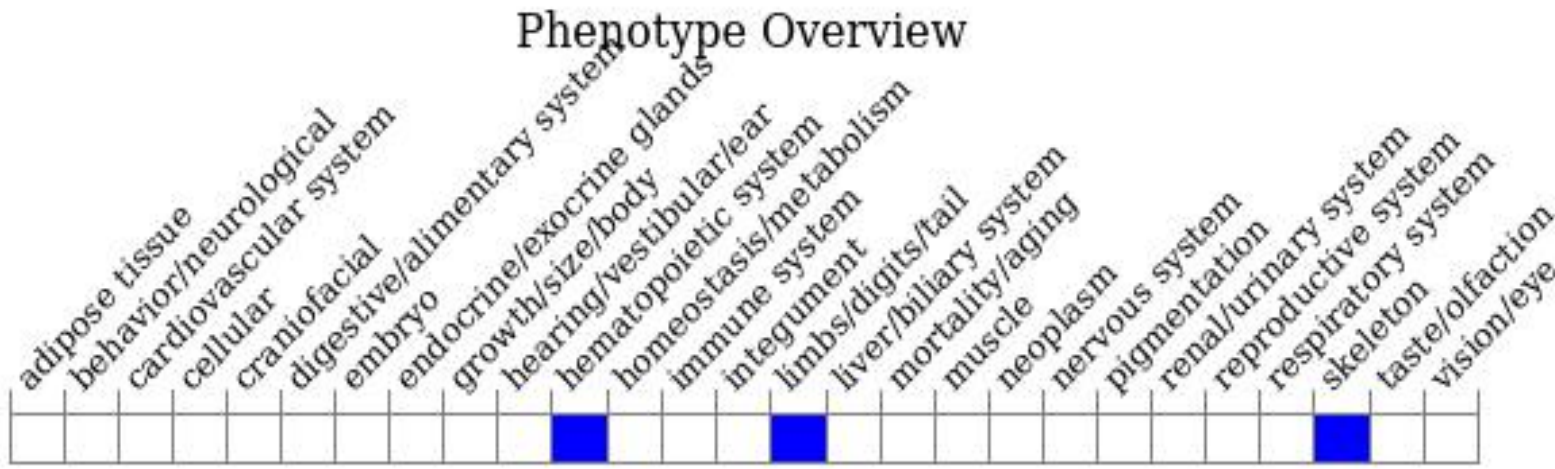The strategy is based on the design of *Scarf2-201* transcript,the transcription is shown below:

Genomic location distribution

Protein domain

ENSMUSP00000012...	
MobiDB lite	
Low complexity (Seg)	
Cleavage site (Sign...	
Superfamily	Growth factor receptor cysteine-rich domain superfamily
SMART	Laminin EGF domain
	EGF-like domain
Prints	PR00011
Pfam	Laminin EGF domain
PROSITE profiles	EGF-like domain
PROSITE patterns	EGF-like, conserved site
PANTHER	Scavenger receptor class F member 2
	Scavenger receptor class F member SREC1/2
Gene3D	2.10.25.10 2.170.300.10
All sequence SNPs/i...	Sequence variants (dbSNP and all other sources)

Variant Legend

- ▮ missense variant
- ▮ splice region variant
- ▮ synonymous variant

Scale bar   0   80   160   240   320   400   480   560   640   720   833

Mouse phenotype description(MGI)

Phenotype Overview

Phenotypes affected by the gene are marked in blue.Data quoted from MGI database(http://www.informatics.jax.org/).

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