

***Tgfbr2* Cas9-KO Strategy**

Designer: Xueting Zhang

Project Overview

Project Name

Tgfbr2

Project type

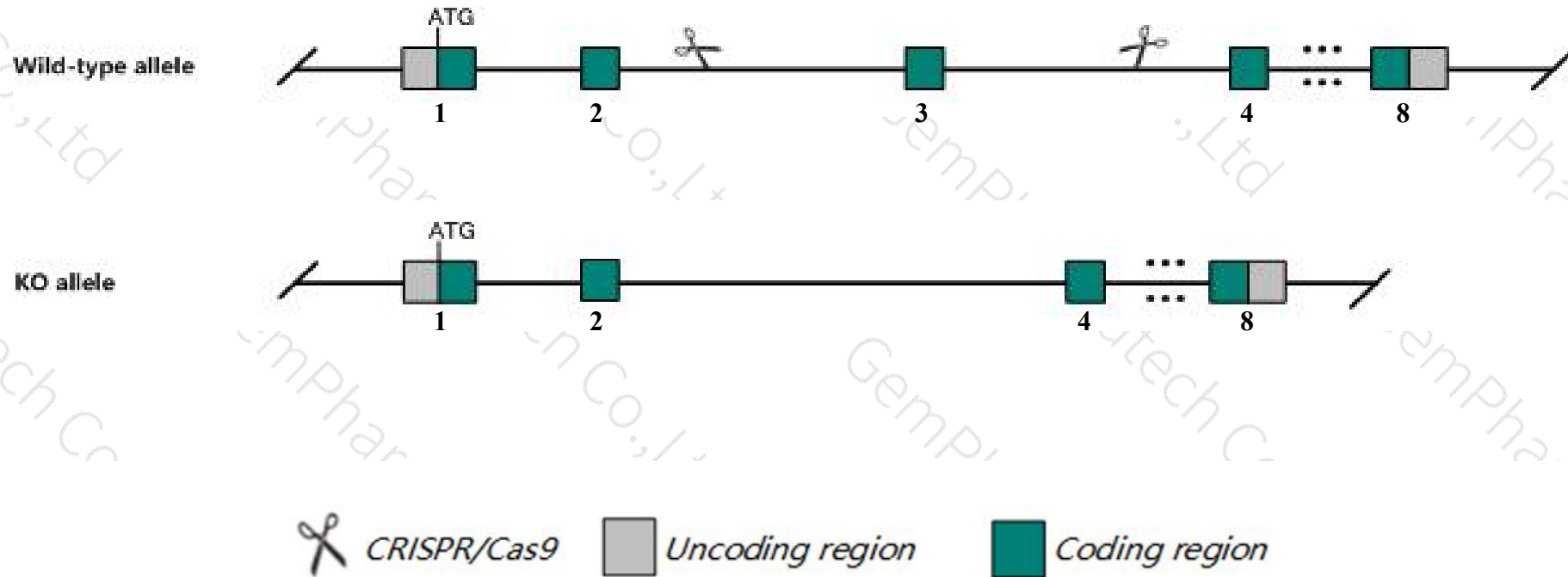
Cas9-KO

Strain background

C57BL/6JGpt

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Tgfbr2* gene. The schematic diagram is as follows:



- The *Tgfbr2* gene has 2 transcripts. According to the structure of *Tgfbr2* gene, exon3 of *Tgfbr2-202* (ENSMUST00000061101.11) transcript is recommended as the knockout region. The region contains 169bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Tgfbr2* gene. The brief process is as follows: CRISPR/Cas9 system

- According to the existing MGI data, Homozygotes for targeted null mutations die in midgestation with impaired yolk sac hematopoiesis and vasculogenesis. Selective knockouts in bone marrow cells and cranial neural crest show inflammation and cleft palate/calvarial defects, respectively.
- The *Tgfbr2* gene is located on the Chr9. 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)

Tgfr2 transforming growth factor, beta receptor II [Mus musculus (house mouse)]

Gene ID: 21813, updated on 19-Mar-2019

Summary



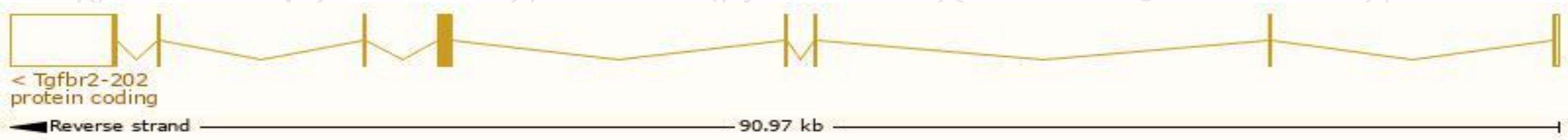
Official Symbol	Tgfr2 provided by MGI
Official Full Name	transforming growth factor, beta receptor II provided by MGI
Primary source	MGI:MGI:98729
See related	Ensembl:ENSMUSG00000032440
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	1110020H15Rik, AU042018, DNIIR, RIIDN, TBR-II, TbetaR-II, TbetaRII
Expression	Broad expression in lung adult (RPKM 56.6), subcutaneous fat pad adult (RPKM 56.5) and 23 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

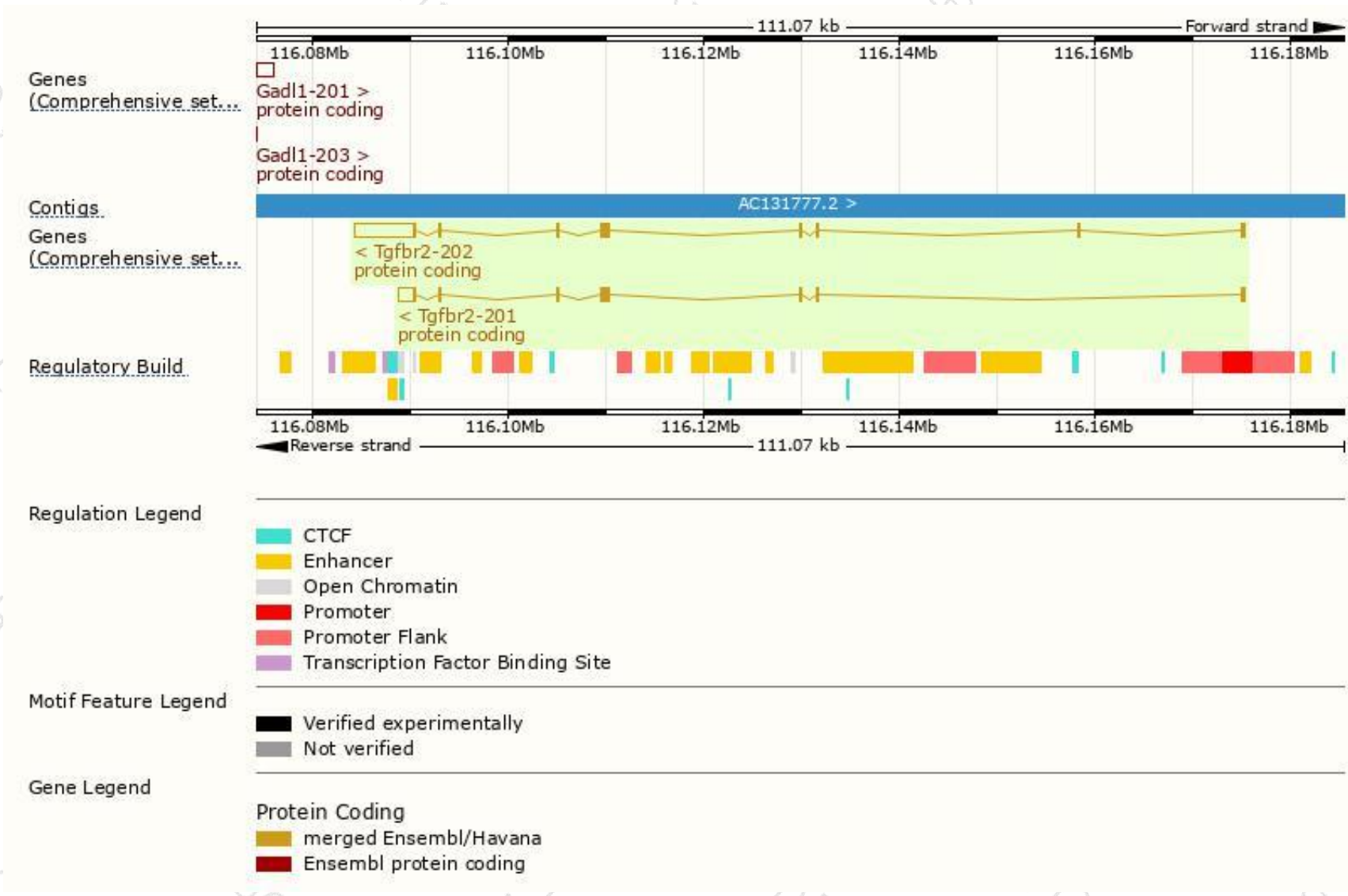
The gene has 2 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Tgfbr2-202	ENSMUST00000061101.11	8092	592aa	Protein coding	CCDS23601	Q543C0 Q62312	TSL:1 GENCODE basic
Tgfbr2-201	ENSMUST00000035014.7	3476	567aa	Protein coding	CCDS23602	Q62312	TSL:1 GENCODE basic APPRIS P1

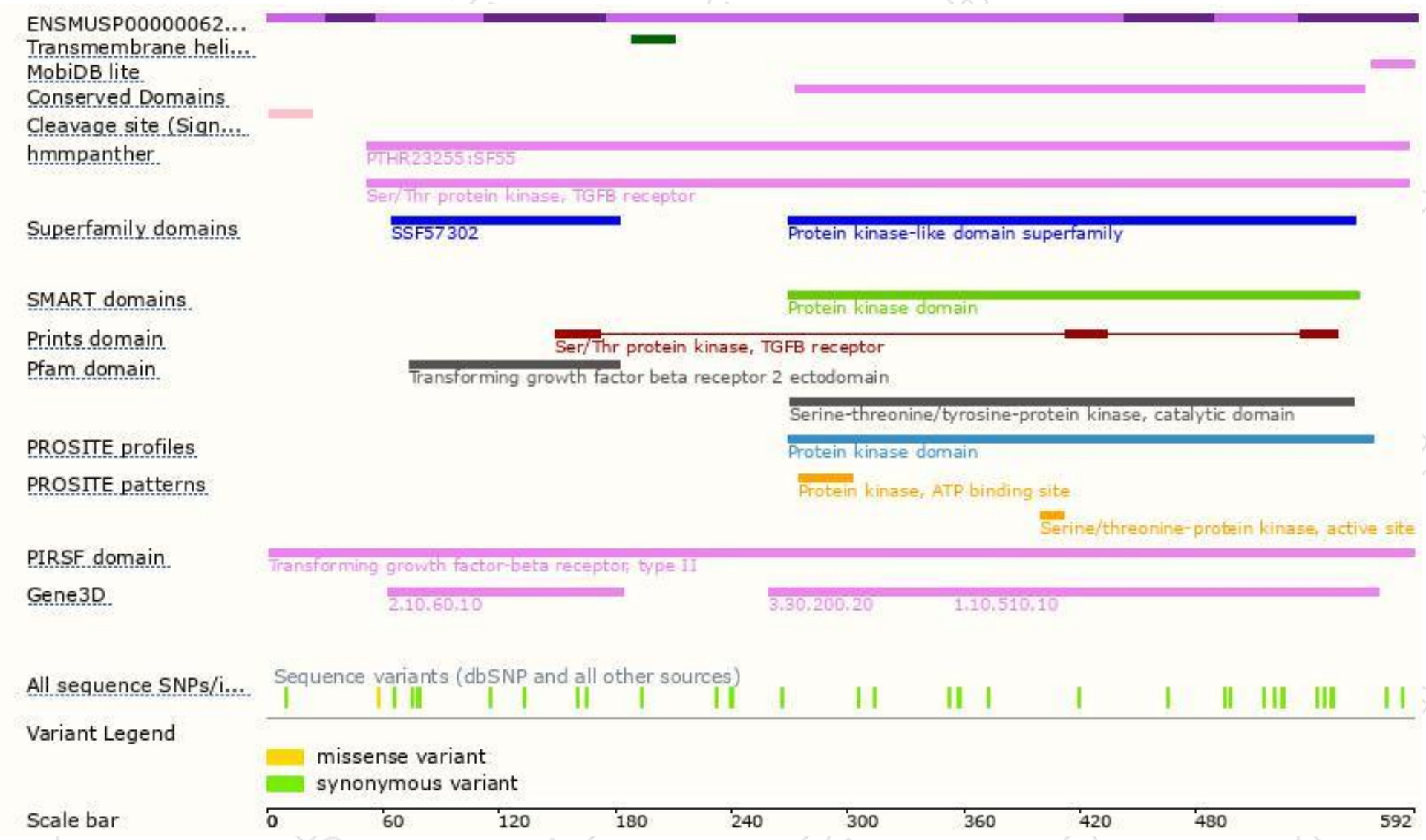
The strategy is based on the design of *Tgfbr2-202* transcript,The transcription is shown below



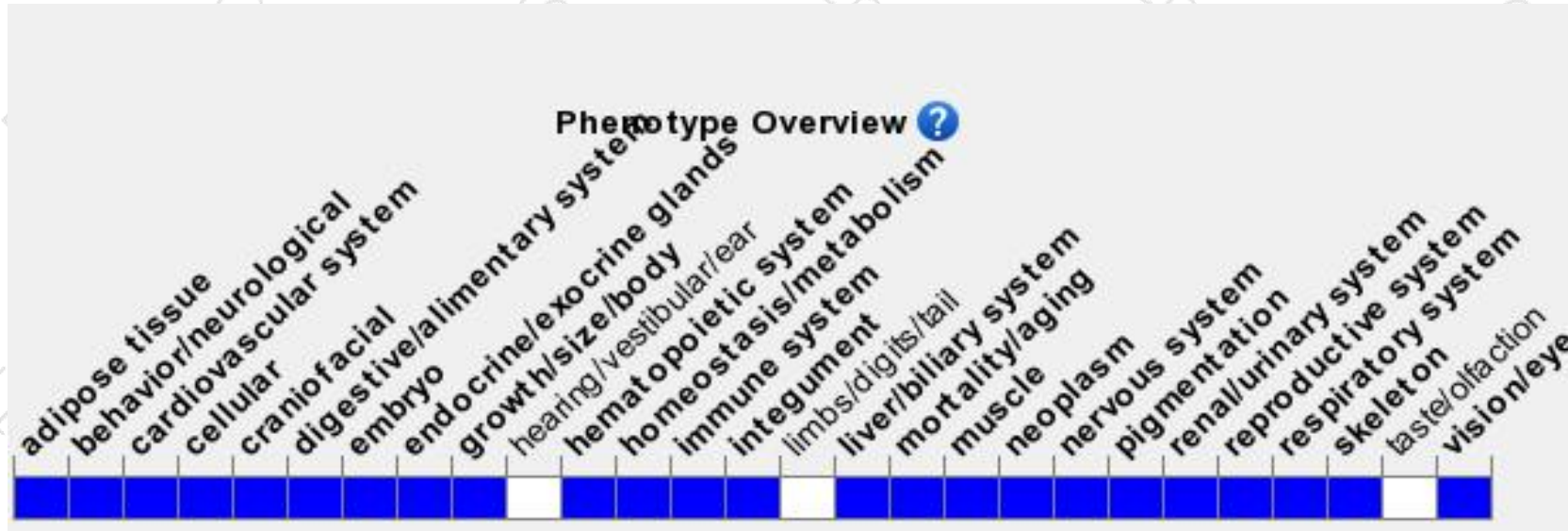
Genomic location distribution



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/>).

According to the existing MGI data, Homozygotes for targeted null mutations die in midgestation with impaired yolk sac hematopoiesis and vasculogenesis. Selective knockouts in bone marrow cells and cranial neural crest show inflammation and cleft palate/calvarial defects, respectively.

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

Tel: 400-9660890

