Cavin2 Cas9-CKO Strategy

Designer: Daohua Xu

Reviewer: Huimin Su

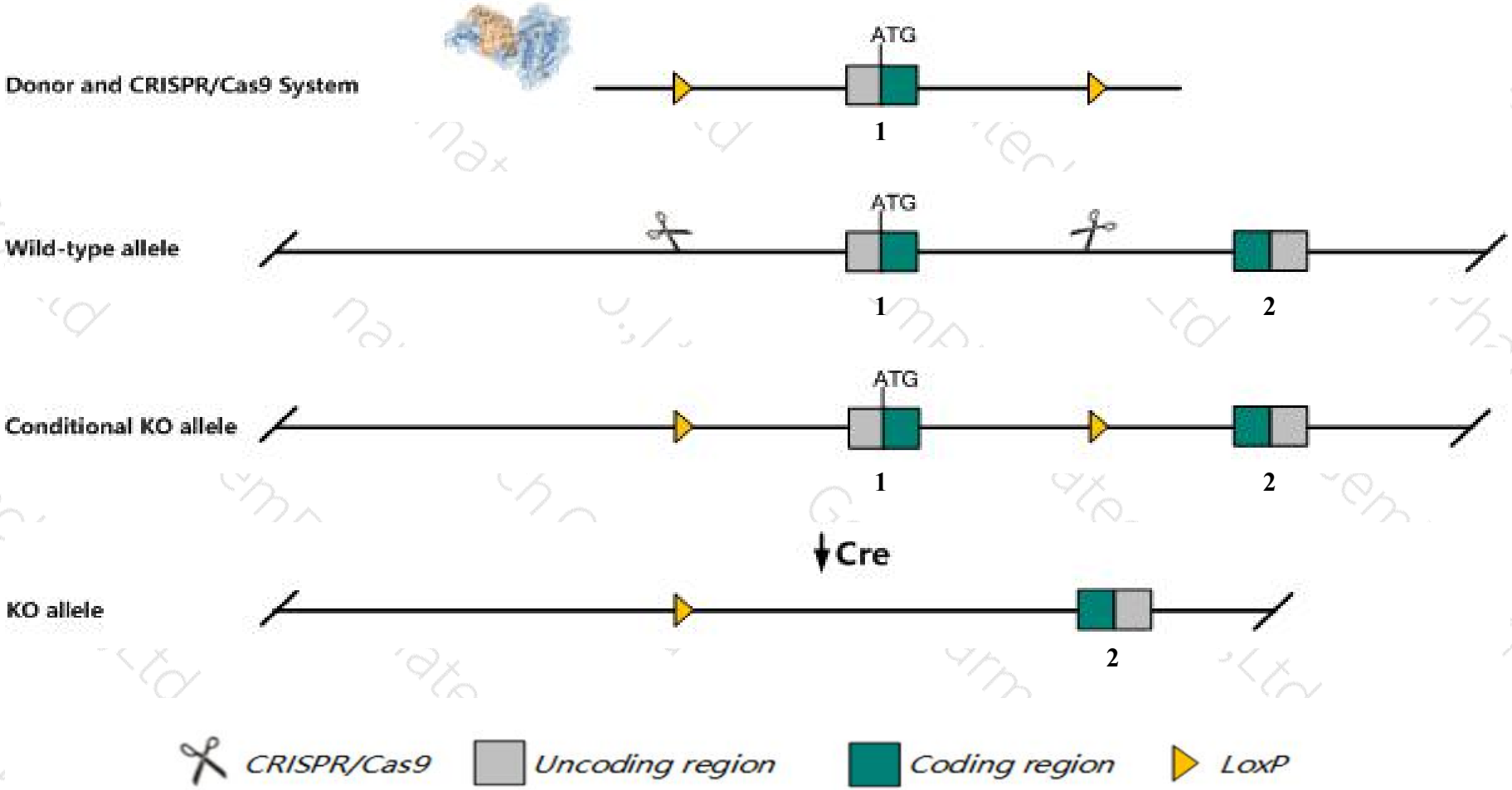
Design Date: 2020-5-28

Project Overview

Project Name	***Cavin2***
Project type	**Cas9-CKO**
Strain background	**C57BL/6JGpt**

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Cavin2* gene. The schematic diagram is as follows:



Technical routes

- The *Cavin2* gene has 1 transcript. According to the structure of *Cavin2* gene, exon1 of *Cavin2-201* (ENSMUST00000051572.7) transcript is recommended as the knockout region.The region contains start codon ATG. Knock out the region will result in disruption of protein function.

- In this project we use CRISPR/Cas9 technology to modify *Cavin2* gene. The brief process is as follows:CRISPR/Cas9 system 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 will be 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

- According to the existing MGI data,mice homozygous for a knock-out allele exhibit abnormal caveolae formation in lung and adipose endothelia and adipocytes with gaps in the lung capillaries.
- The KO region contains partial intron of the *9330175M20Rik* gene.Knockout the region may affect the function of *9330175M20Rik* gene.
- The *Cavin2* gene is located on the Chr1. 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）

集萃药康 GemPharmatech

Cavin2 caveolae associated 2 [Mus musculus (house mouse)]

Gene ID: 20324, updated on 13-Mar-2020

Summary

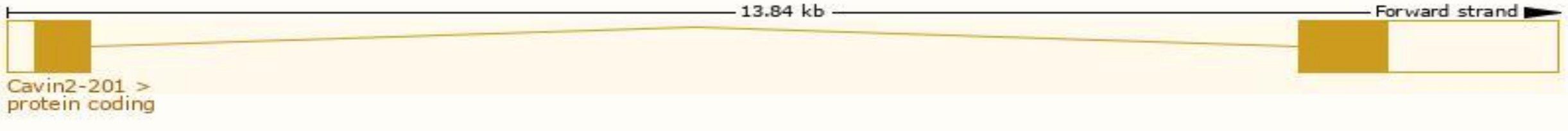
Official Symbol	Cavin2 provided by MGI
Official Full Name	caveolae associated 2 provided byMGI
Primary source	MGI:MGI:99513
See related	Ensembl:ENSMUSG00000045954
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	Sdpr
Expression	Broad expression in lung adult (RPKM 123.4), subcutaneous fat pad adult (RPKM 70.9) and 16 other tissuesSee more
Orthologs	human all

Transcript information（Ensembl）

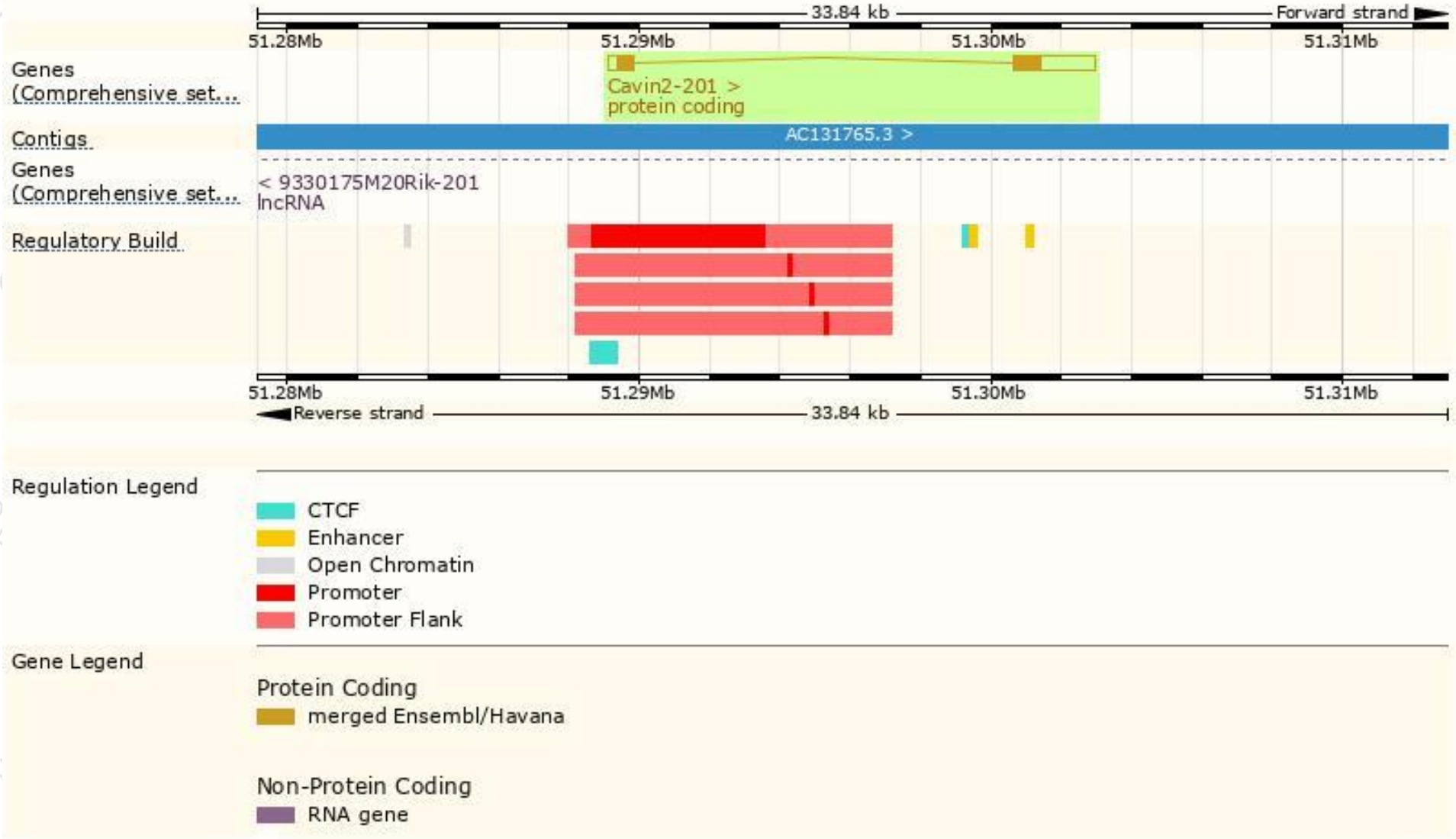
The gene has 1 transcript,and the transcript is shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Cavin2-201	ENSMUST00000051572.7	3055	418aa	Protein coding	CCDS14940	Q63918	TSL:1 GENCODE basic APPRIS is a system to annotate alternatively spliced transcripts based on a range of computational methods to identify the most functionally important transcript(s) of a gene. APPRIS P1

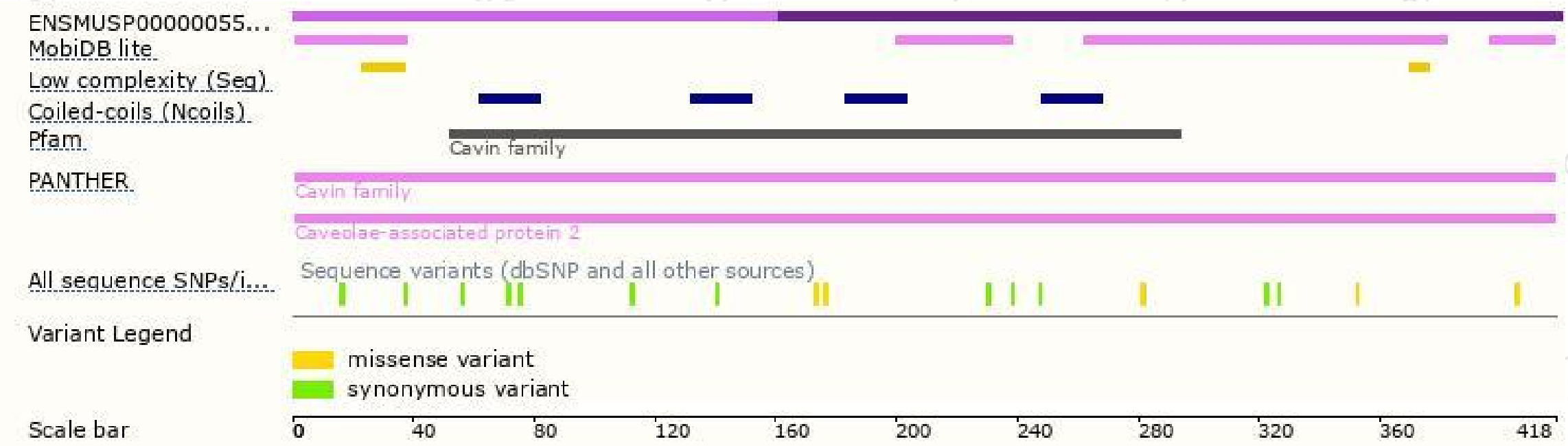
The strategy is based on the design of *Cavin2-201* transcript,the transcription is shown below:



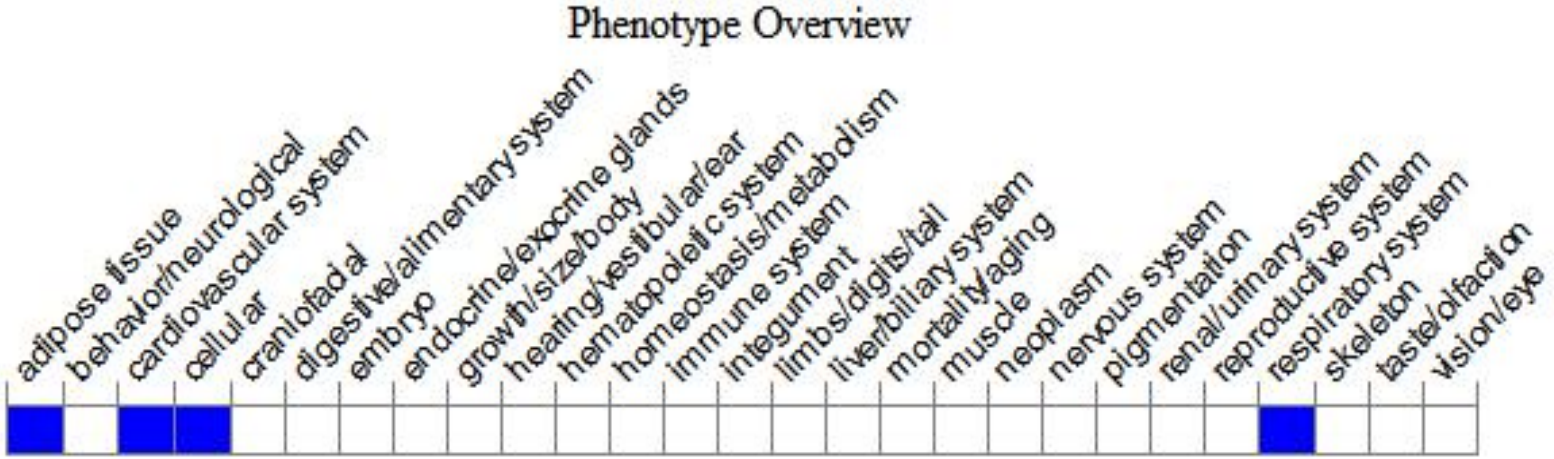
Genomic location distribution



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/).

According to the existing MGI data,mice homozygous for a knock-out allele exhibit abnormal caveolae formation in lung and adipose endothelia and adipocytes with gaps in the lung capillaries.

集萃药康
GemPharmatech

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

Tel: 400-9660890

集萃药康生物科技
GemPharmatech Co.,Ltd