Epb41l1 Cas9-CKO Strategy

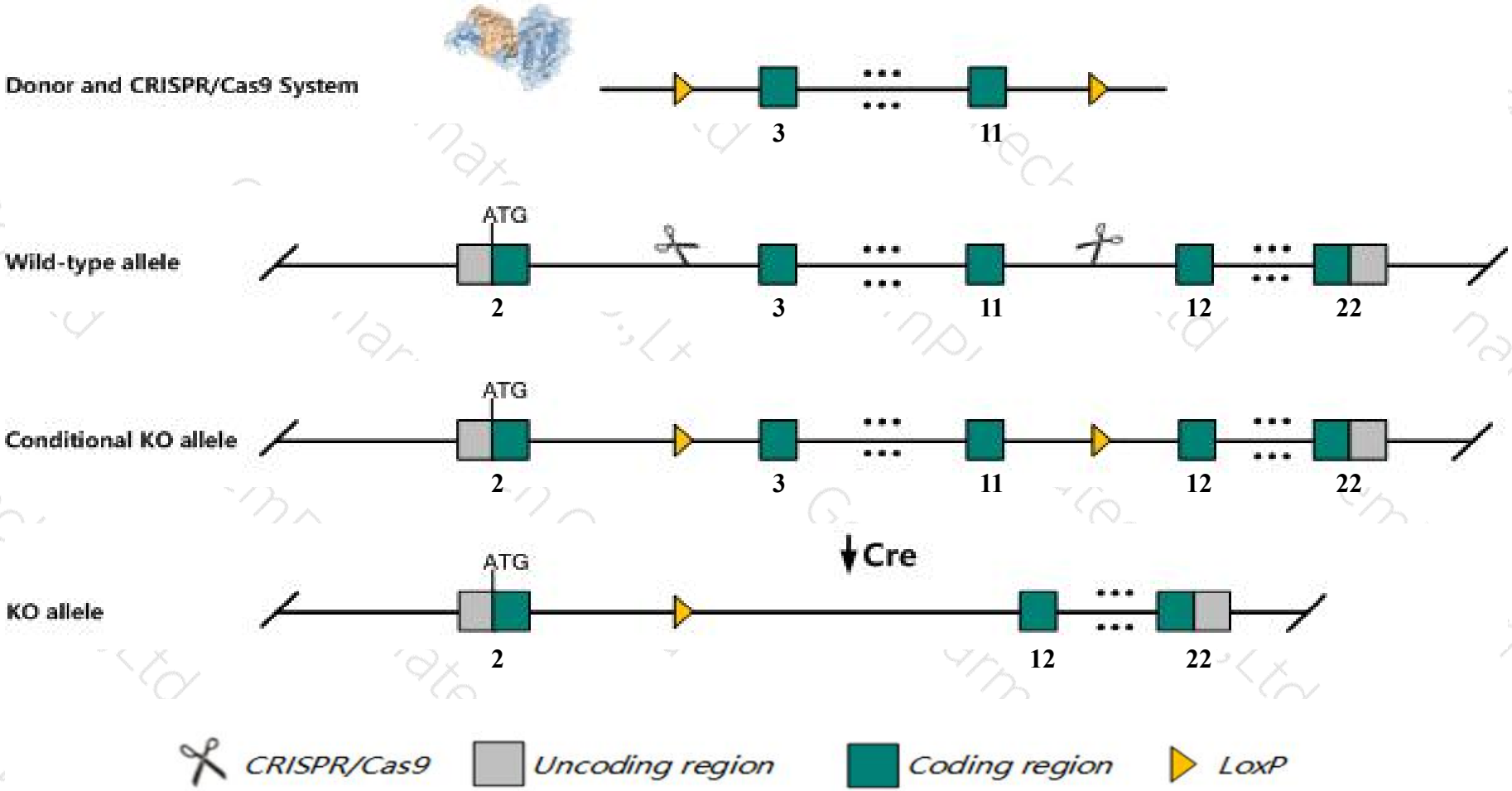
Designer:Xueting Zhang
Reviewer:Yanhua Shen
Date:2020-02-06

Project Overview

Project Name	***Epb41l1***
Project type	**Cas9-CKO**
Strain background	**C57BL/6JGpt**

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Epb41l1* gene. The schematic diagram is as follows:



Technical routes

- The *Epb41l1* gene has 9 transcripts. According to the structure of *Epb41l1* gene, exon3-exon11 of *Epb41l1-201* (ENSMUST00000029155.15) transcript is recommended as the knockout region.The region contains 1123bp coding sequence. Knock out the region will result in disruption of protein function.

- In this project we use CRISPR/Cas9 technology to modify *Epb41l1* 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 null allele exhibit no obvious phenotypic abnormalities.
- Transcript *Epb41l1*-207 may not be affected.
- The *Epb41l1* 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 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

Epb41l1 erythrocyte membrane protein band 4.1 like 1 [*Mus musculus* (house mouse)]

Gene ID: 13821, updated on 24-Oct-2019

Summary

Official Symbol	Epb41l1 provided by MGI
Official Full Name	erythrocyte membrane protein band 4.1 like 1 provided by MGI
Primary source	MGI:MGI:103010
See related	Ensembl:ENSMUSG00000027624
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	4.1N; NBL1; Epb4.1l1; mKIAA0338
Expression	Broad expression in cortex adult (RPKM 33.4), cerebellum adult (RPKM 32.7) and 20 other tissues See more
Orthologs	human all

Genomic context

Location: 2 H1; 2 77.39 cM

See Epb41l1 in Genome Data Viewer

Exon count: 29

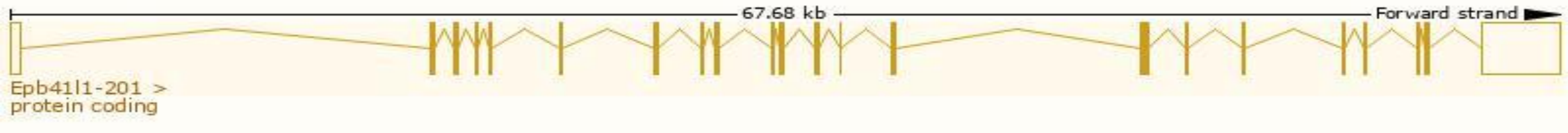
Annotation release	Status	Assembly	Chr	Location
108	current	GRCm38.p6 (GCF_000001635.26)	2	NC_000068.7 (156417595..156543214)
Build 37.2	previous assembly	MGSCv37 (GCF_000001635.18)	2	NC_000068.6 (156246788..156368950)

Transcript information（Ensembl）

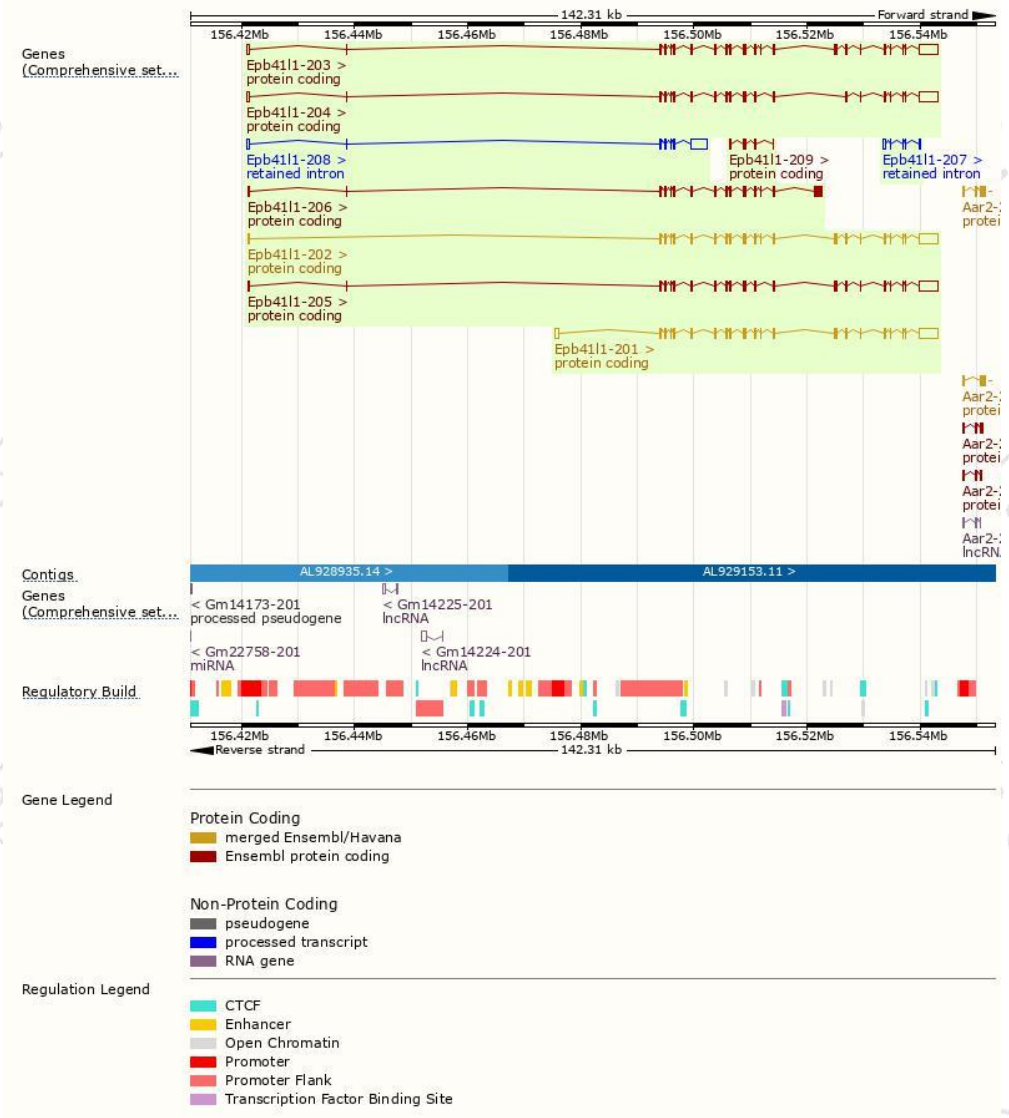
The gene has 9 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Epb41l1-201	ENSMUST00000029155.15	6521	879aa	Protein coding	CCDS16966	A2AUK5	TSL:5 GENCODE basic
Epb41l1-203	ENSMUST00000103137.9	6490	879aa	Protein coding	CCDS16966	A2AUK5	TSL:1 GENCODE basic
Epb41l1-205	ENSMUST00000109577.8	6251	867aa	Protein coding	CCDS71169	A2AUK8	TSL:5 GENCODE basic APPRIS P1
Epb41l1-202	ENSMUST00000103136.7	6249	879aa	Protein coding	CCDS16966	A2AUK5	TSL:1 GENCODE basic
Epb41l1-204	ENSMUST00000109574.7	5904	730aa	Protein coding	CCDS71170	A2AUK7	TSL:1 GENCODE basic
Epb41l1-206	ENSMUST00000125153.8	3471	1064aa	Protein coding	-	E9PV14	CDS 3' incomplete TSL:1
Epb41l1-209	ENSMUST00000144013.1	640	213aa	Protein coding	-	A0A2R8VHB6	5' and 3' truncations in transcript evidence prevent annotation of the start and the end of the CDS. CDS 5' and 3' incomplete TSL:3
Epb41l1-208	ENSMUST00000142048.7	3643	No protein	Retained intron	-	-	TSL:2
Epb41l1-207	ENSMUST00000137067.1	820	No protein	Retained intron	-	-	TSL:2

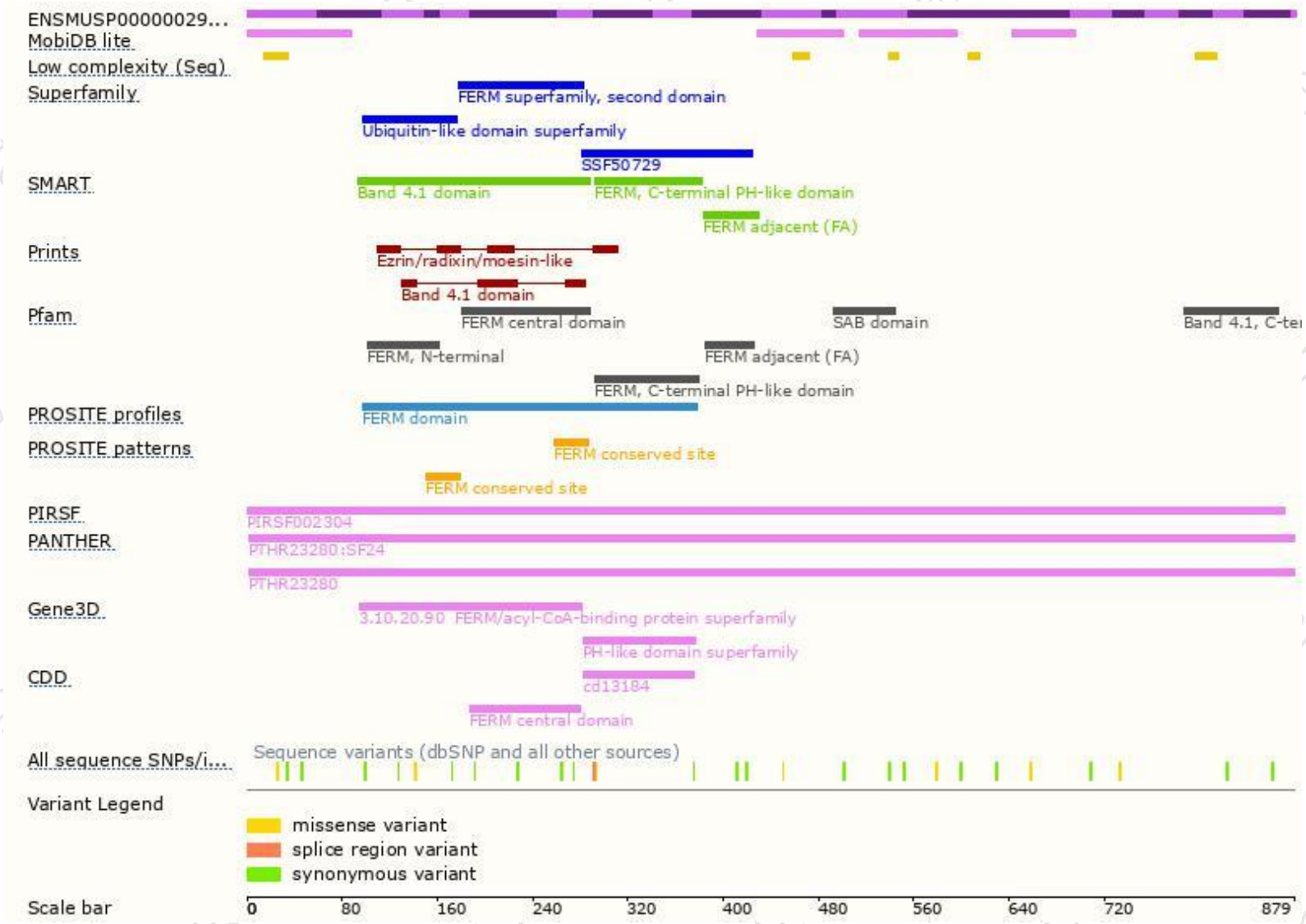
The strategy is based on the design of *Epb41l1-201* transcript,The transcription is shown below



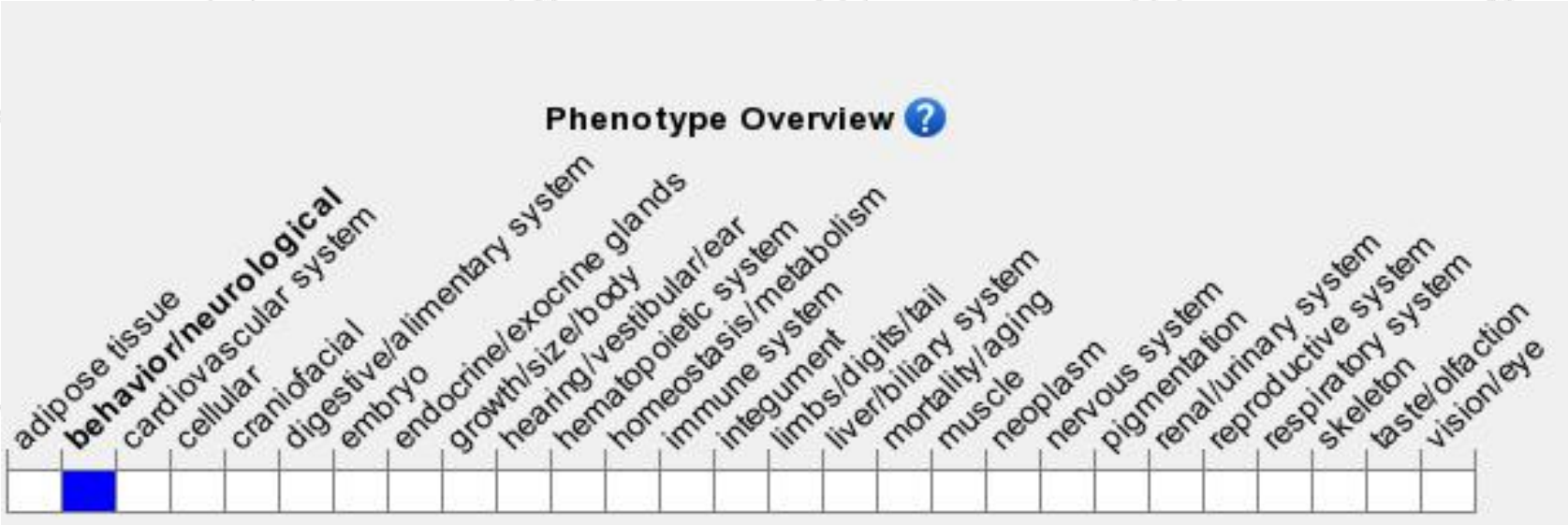
Genomic location distribution



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 null allele exhibit no obvious phenotypic abnormalities.

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