Ccni Cas9-CKO Strategy

Designer:Xueting Zhang
Reviwer:Yanhua Shen
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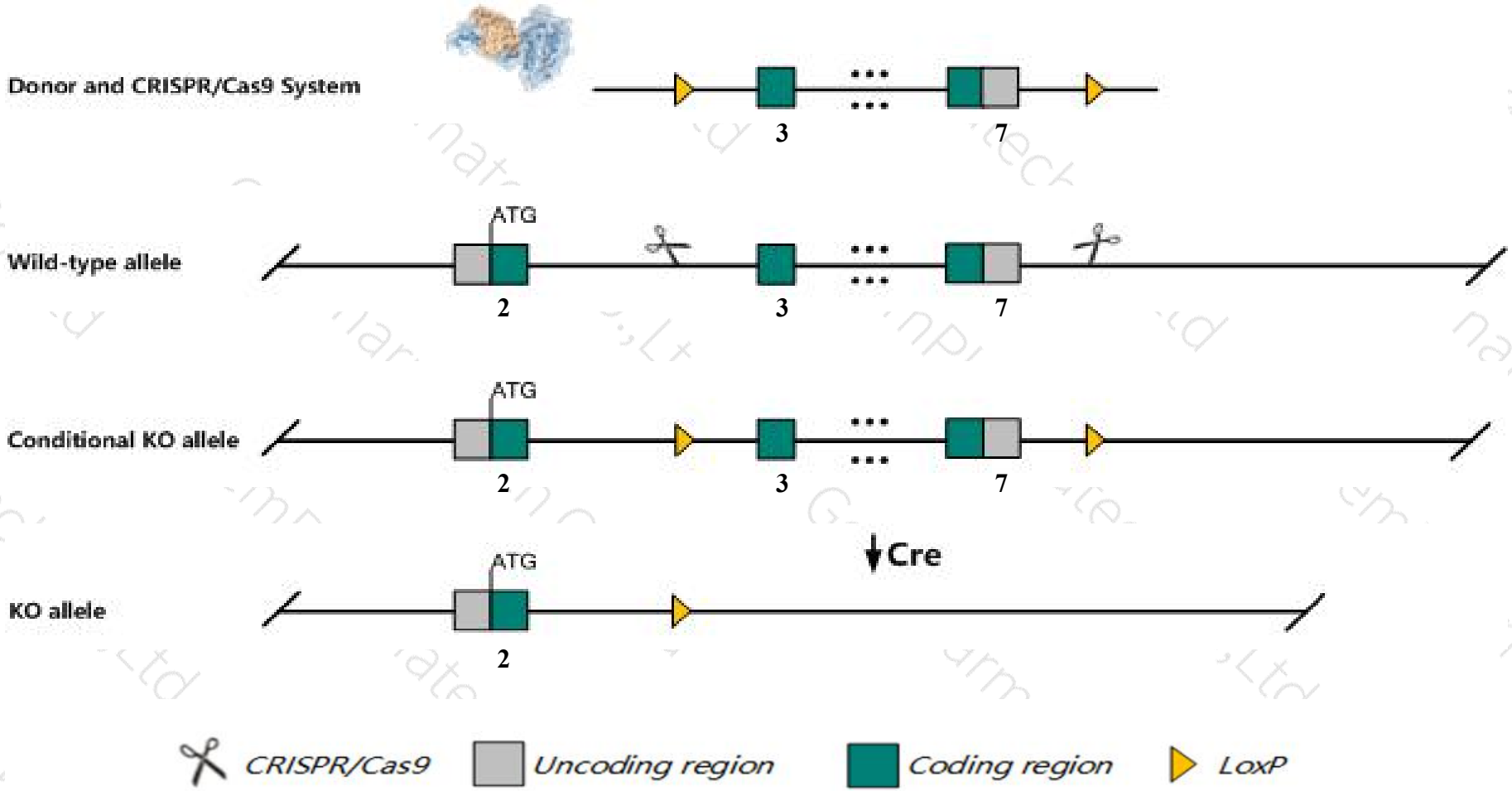
Project Overview

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

Conditional Knockout strategy

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



Technical routes

- The *Ccni* gene has 5 transcripts. According to the structure of *Ccni* gene, exon3-exon7 of *Ccni-201* (ENSMUST00000058550.14) transcript is recommended as the knockout region.The region contains most of the coding sequence.Knock out the region will result in disruption of protein function.

- In this project we use CRISPR/Cas9 technology to modify *Ccni* 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 targeted null mutation are viable and fertile and do not display any gross physical or behavioral abnormalities.
- *Gm43681* gene will be deleted.
- The *Ccni* gene is located on the Chr5. 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）

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Ccni cyclin I [*Mus musculus* (house mouse)]

Gene ID: 12453, updated on 12-Aug-2019

Summary

Official Symbol	Ccni provided by MGI
Official Full Name	cyclin I provided by MGI
Primary source	MGI:MGI:1341077
See related	Ensembl:ENSMUSG00000063015
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
Expression	Ubiquitous expression in testis adult (RPKM 56.6), colon adult (RPKM 53.2) and 28 other tissues See more
Orthologs	human all

Genomic context

Location: 5; 5 E2

See Ccni in Genome Data Viewer

Exon count: 8

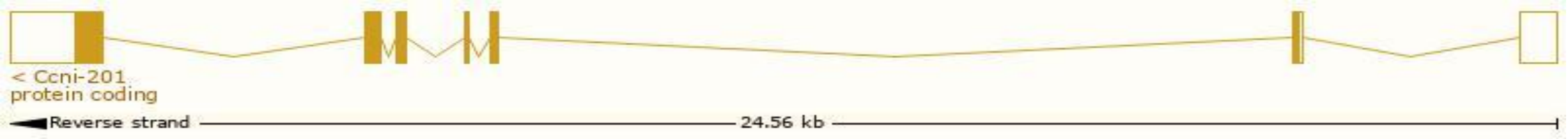
Annotation release	Status	Assembly	Chr	Location
108	current	GRCm38.p6 (GCF_000001635.26)	5	NC_000071.6 (93181933..93206495, complement)
Build 37.2	previous assembly	MGSCv37 (GCF_000001635.18)	5	NC_000071.5 (93610959..93635521, complement)

Transcript information（Ensembl）

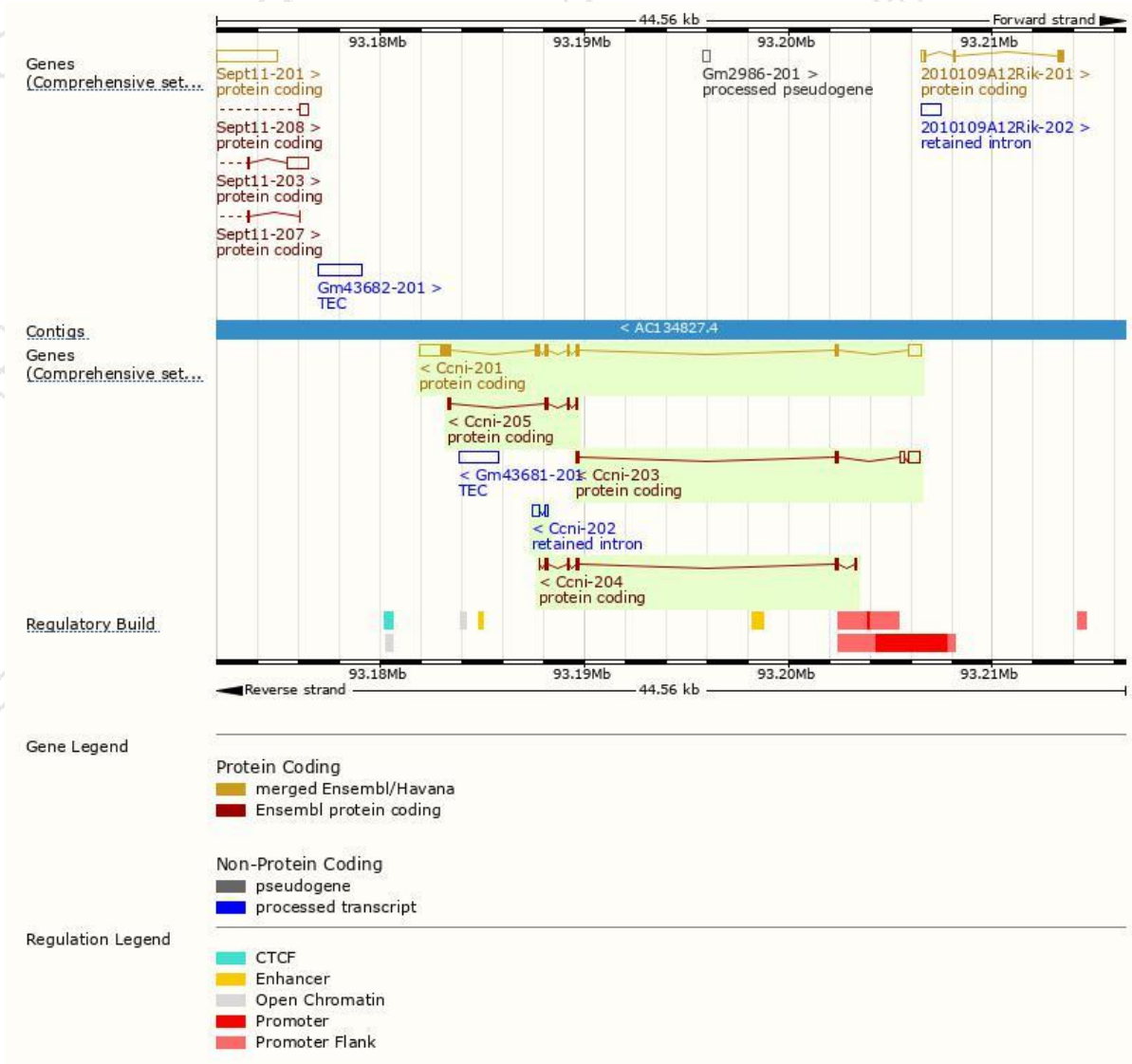
The gene has 5 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Ccni-201	ENSMUST00000058550.14	2804	377aa	Protein coding	CCDS19436	Q9Z2V9	TSL:1 GENCODE basic APPRIS P1
Ccni-203	ENSMUST00000144514.2	1068	81aa	Protein coding	-	D3Z602	CDS 3' incomplete TSL:5
Ccni-204	ENSMUST00000151568.7	658	172aa	Protein coding	-	D3Z680	CDS 3' incomplete TSL:5
Ccni-205	ENSMUST00000201823.3	446	148aa	Protein coding	-	A0A0J9YU25	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
Ccni-202	ENSMUST00000123033.1	507	No protein	Retained intron	-	-	TSL:2

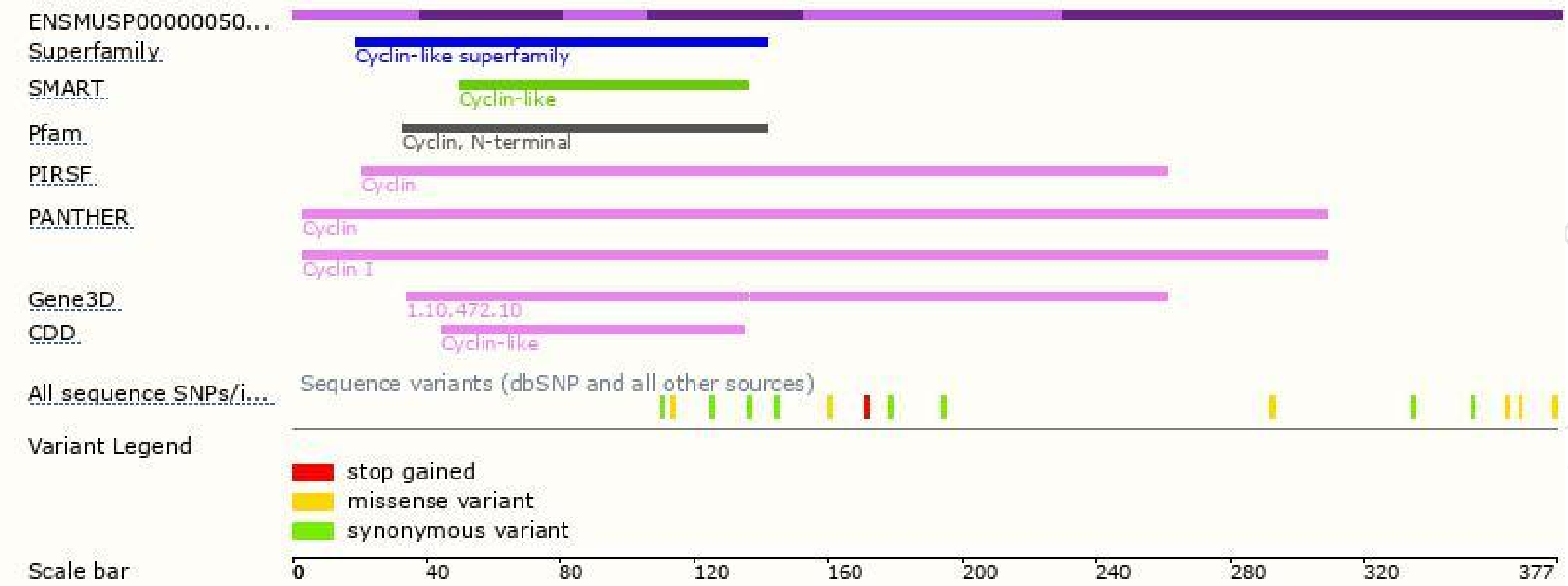
The strategy is based on the design of *Ccni-201* transcript,The transcription is shown below



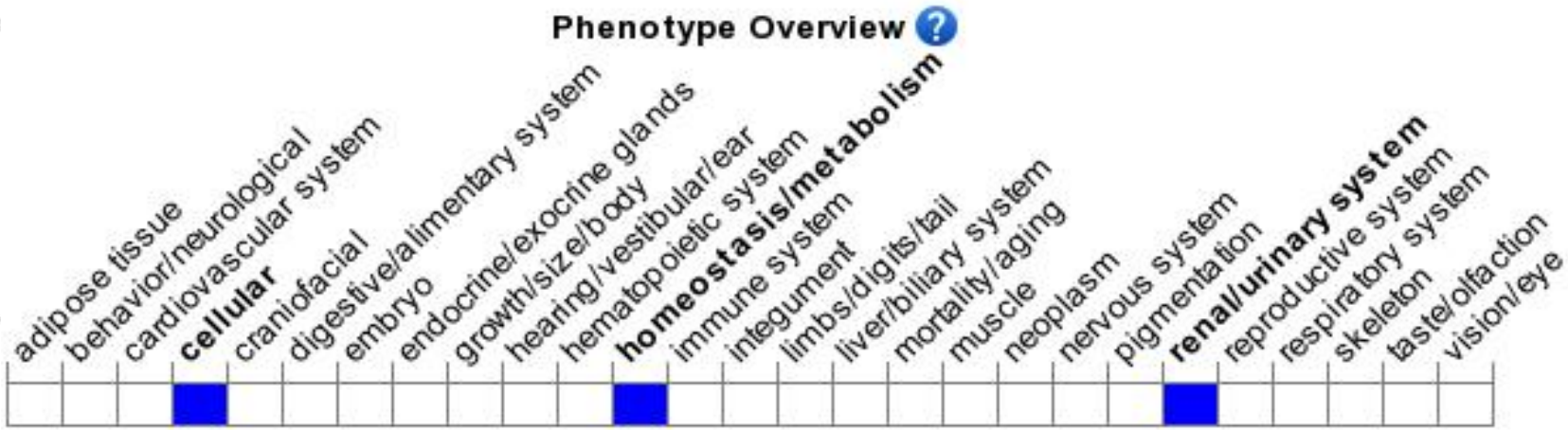
Genomic location distribution



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/).

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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