# *Rps4x* Cas9-CKO Strategy

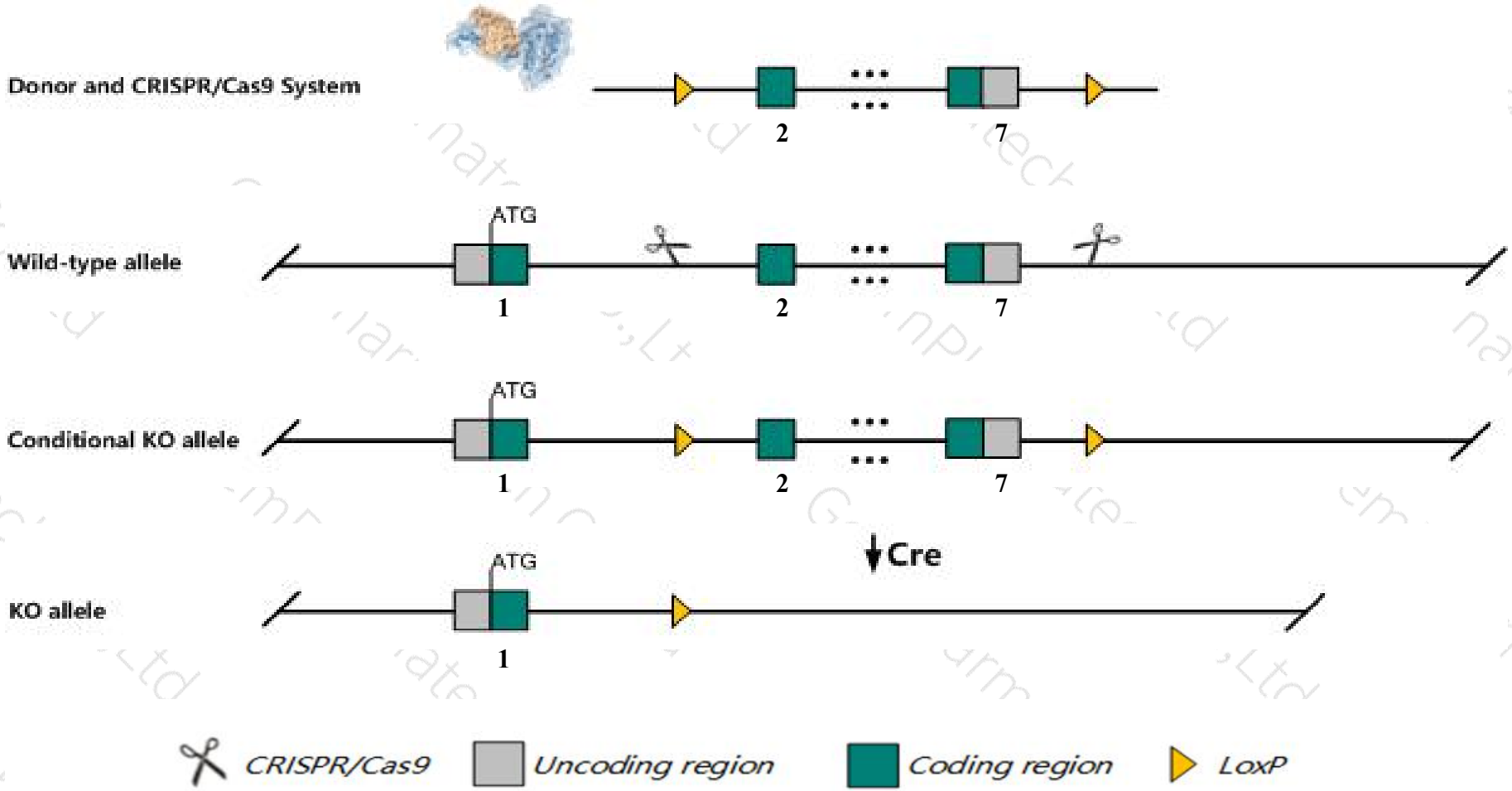
Designer:Xiaojing Li
Reviewer:JiaYu
Design Date:2020-2-14

# Project Overview

| | |
|---|---|
| **Project Name** | ***Rps4x*** |
| **Project type** | **Cas9-CKO** |
| **Strain background** | **C57BL/6JGpt** |

# Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Rps4x* gene. The schematic diagram is as follows:



# Technical routes

- The *Rps4x* gene has 3 transcripts. According to the structure of *Rps4x* gene, exon2-exon7 of *Rps4x-201* (ENSMUST00000033683.7) 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 *Rps4x* 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,Rps4x, Ube1x, and Zfx are subject to X-inactivation in mouse but not in human, suggesting that Turner syncrome may be in part due to insufficiency in these gene products.

- The *Rps4x* gene is located on the ChrX. 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

## Rps4x ribosomal protein S4, X-linked [ *Mus musculus* (house mouse) ]

Gene ID: 20102, updated on 9-Feb-2020

### Summary

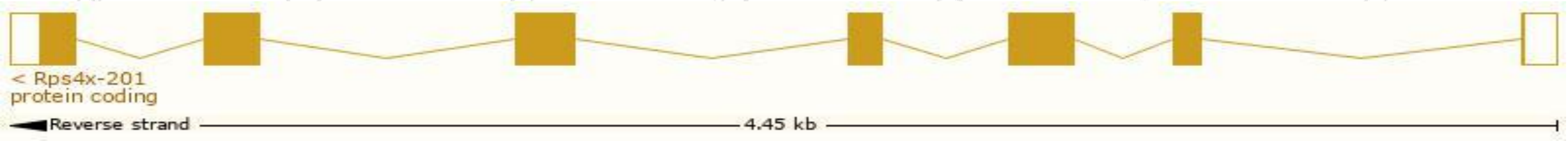
| | |
|---|---|
| **Official Symbol** | Rps4x provided by MGI |
| **Official Full Name** | ribosomal protein S4, X-linked provided by MGI |
| **Primary source** | MGI:MGI:98158 |
| **See related** | Ensembl:ENSMUSG00000031320 |
| **Gene type** | protein coding |
| **RefSeq status** | VALIDATED |
| **Organism** | Mus musculus |
| **Lineage** | Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus |
| **Also known as** | Rps4; Rps4-1 |
| **Expression** | Broad expression in bladder adult (RPKM 580.8), liver E14 (RPKM 549.2) and 23 other tissues See more |
| **Orthologs** | human all |

# Transcript information（Ensembl）

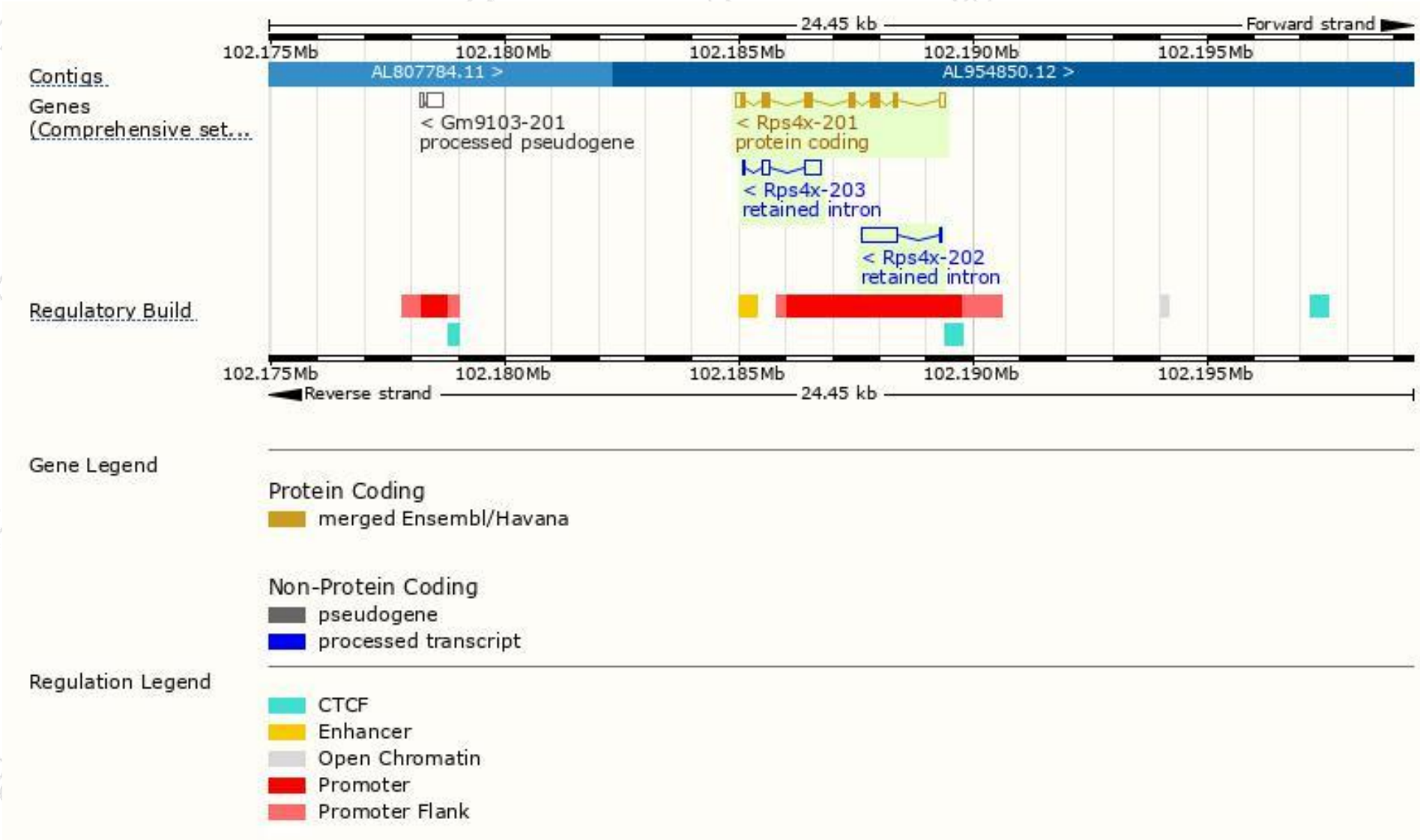
The gene has 3 transcripts,all transcripts are shown below:

| Name | Transcript ID | bp | Protein | Biotype | CCDS | UniProt | Flags |
|---|---|---|---|---|---|---|---|
| **Rps4x-201** | ENSMUST00000033683.7 | 975 | 263aa | Protein coding | CCDS41083 | P62702 Q545X8 | TSL:1 GENCODE basic APPRIS P1 |
| **Rps4x-202** | ENSMUST00000152739.1 | 784 | No protein | Retained intron | - | - | TSL:2 |
| **Rps4x-203** | ENSMUST00000155028.1 | 558 | No protein | Retained intron | - | - | TSL:2 |

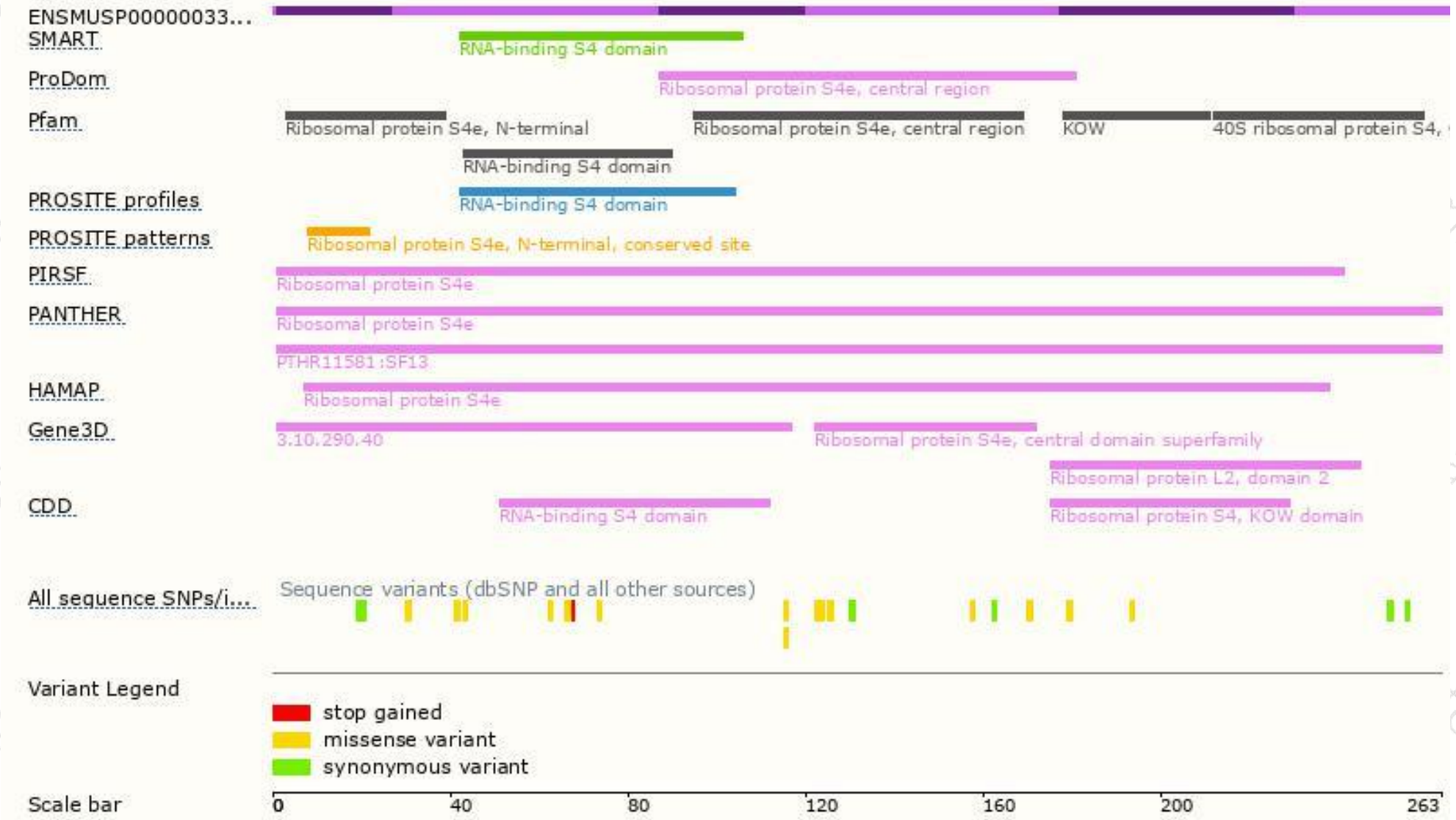
The strategy is based on the design of *Rps4x-201* transcript,The transcription is shown below



# Genomic location distribution



# Protein domain



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