Hdac9 Cas9-CKO Strategy

Designer: Jinling Wang
Reviewer: Shilei Zhu
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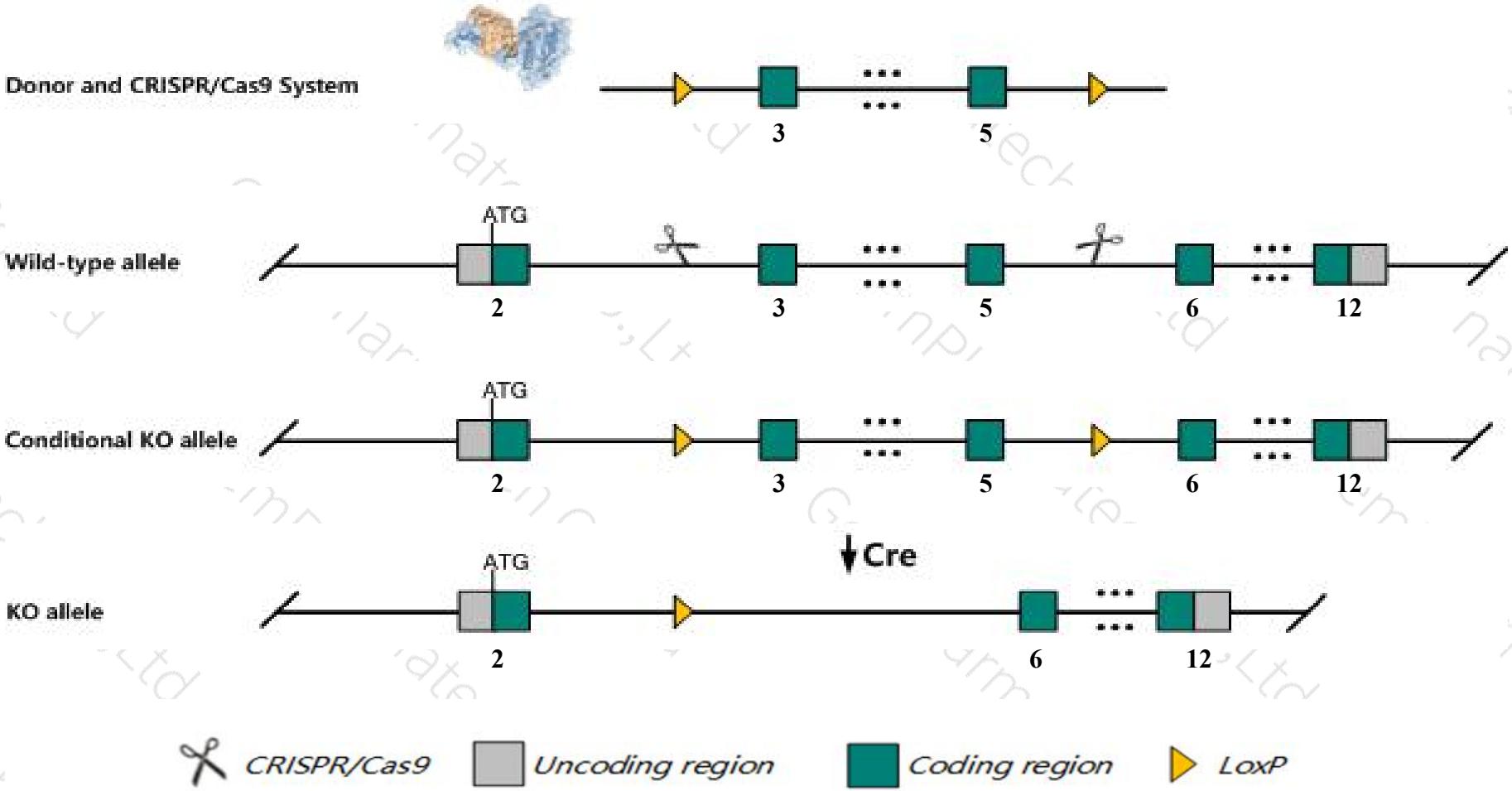
集萃药康 GemPharmatech
GemPharmatech Co.,Ltd

Project Overview

Project Name	***Hdac9***
Project type	**Cas9-CKO**
Strain background	**C57BL/6JGpt**

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Hdac9* gene. The schematic diagram is as follows:



Technical routes

- The *Hdac9* gene has 10 transcripts. According to the structure of *Hdac9* gene, exon3-exon5 of *Hdac9-201* (ENSMUST00000110819.3) transcript is recommended as the knockout region.The region contains 511bp coding sequence. Knock out the region will result in disruption of protein function.

- In this project we use CRISPR/Cas9 technology to modify *Hdac9* 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 disruptions in this gene display age dependent cardiac hypertrophy.

- The *Hdac9* gene is located on the Chr12. 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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Hdac9 histone deacetylase 9 [Mus musculus (house mouse)]

Gene ID: 79221, updated on 12-Mar-2019

Summary

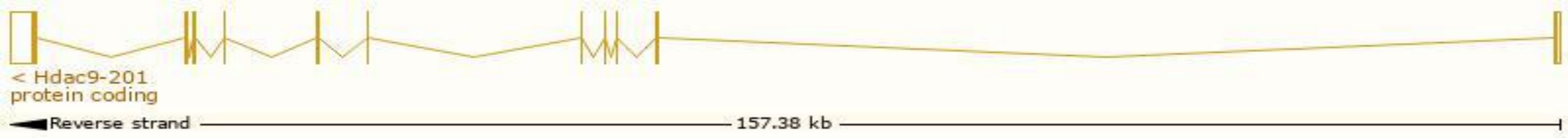
Official Symbol	Hdac9 provided by MGI
Official Full Name	histone deacetylase 9 provided by MGI
Primary source	MGI:MGI:1931221
See related	Ensembl:ENSMUSG00000004698
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	AV022454, D030072B18Rik, HD7B, HD9, HDRP, Hdac7b, Mitr, mKIAA0744
Expression	Broad expression in frontal lobe adult (RPKM 2.7), cortex adult (RPKM 1.4) and 21 other tissues See more
Orthologs	human all

Transcript information（Ensembl）

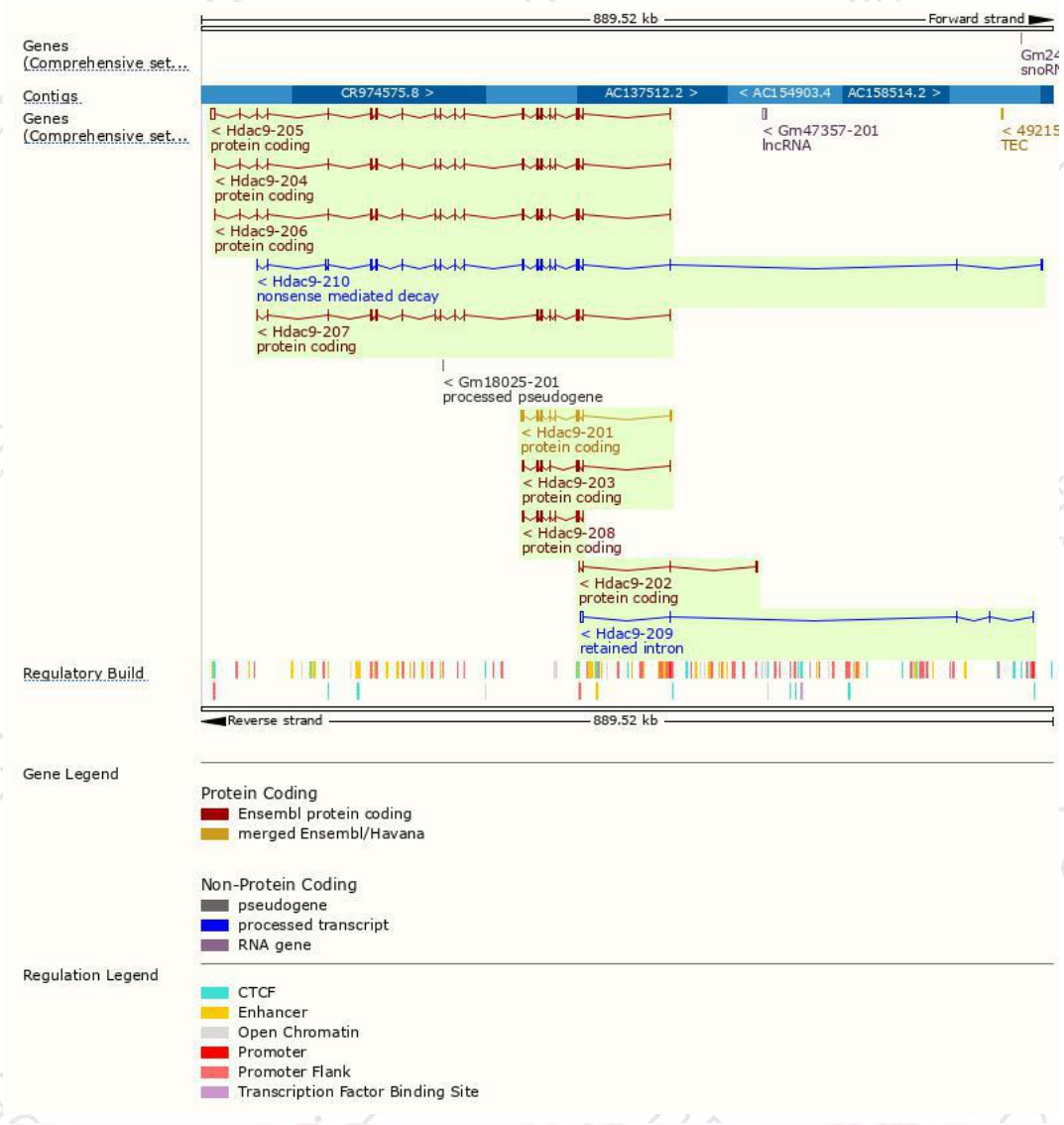
The gene has 10 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Hdac9-201	ENSMUST00000110819.3	4413	588aa	Protein coding	CCDS36432	A0A0R4J1F3	TSL:1 GENCODE basic
Hdac9-205	ENSMUST00000209902.1	7940	1064aa	Protein coding	-	A0A1B0GRH0	TSL:5 GENCODE basic APPRIS P5
Hdac9-204	ENSMUST00000209750.1	3204	1067aa	Protein coding	-	A0A1B0GSQ5	TSL:5 GENCODE basic
Hdac9-206	ENSMUST00000209990.1	3072	1023aa	Protein coding	-	A0A1B0GR65	TSL:5 GENCODE basic APPRIS ALT1
Hdac9-207	ENSMUST00000210724.1	2811	936aa	Protein coding	-	A0A1B0GSE4	TSL:5 GENCODE basic
Hdac9-208	ENSMUST00000211107.1	1683	560aa	Protein coding	-	A0A1B0GSB5	TSL:5 GENCODE basic
Hdac9-203	ENSMUST00000209667.1	1635	544aa	Protein coding	-	A0A1B0GS15	TSL:1 GENCODE basic
Hdac9-202	ENSMUST00000209463.1	753	114aa	Protein coding	-	A0A1B0GSN4	CDS 3' incomplete TSL:3
Hdac9-210	ENSMUST00000211752.1	3446	975aa	Nonsense mediated decay	-	A0A1B0GT67	TSL:1
Hdac9-209	ENSMUST00000211632.1	3706	No protein	Retained intron	-	-	TSL:1

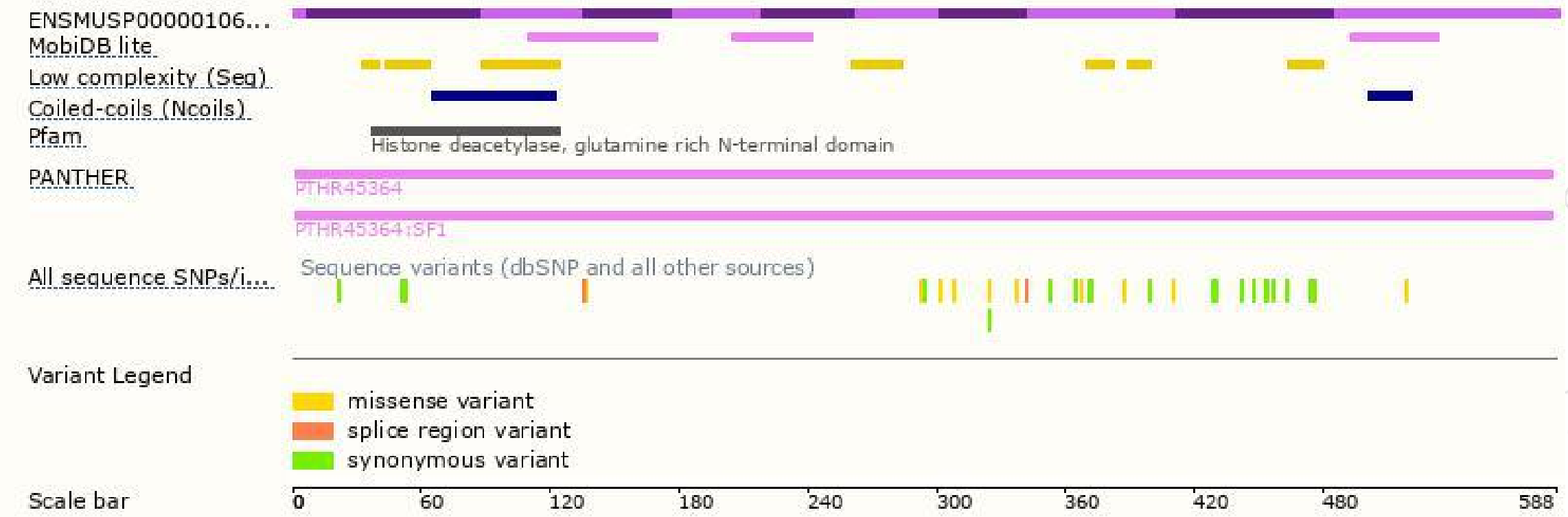
The strategy is based on the design of *Hdac9-201* transcript,The transcription is shown below



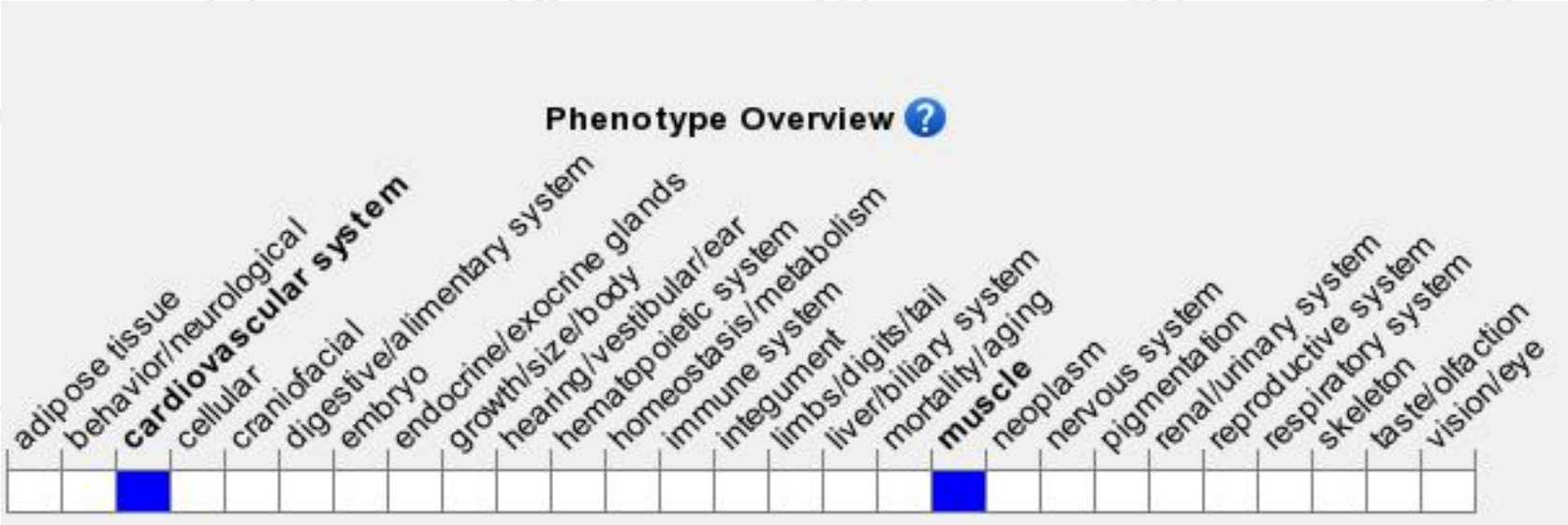
Genomic location distribution



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 disruptions in this gene display age dependent cardiac hypertrophy.

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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

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