

# Myog Cas9-KO Strategy

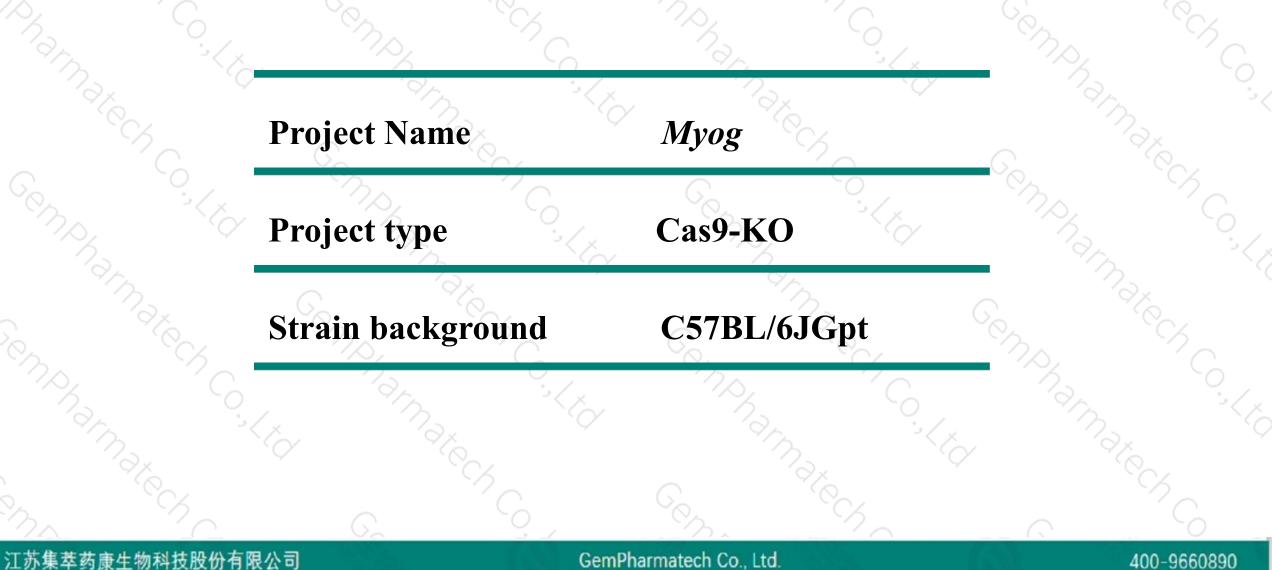
Designer:Fengjuan Wang

Reviewer:Shilei Zhu

Design Date:2020-2-27

### **Project Overview**



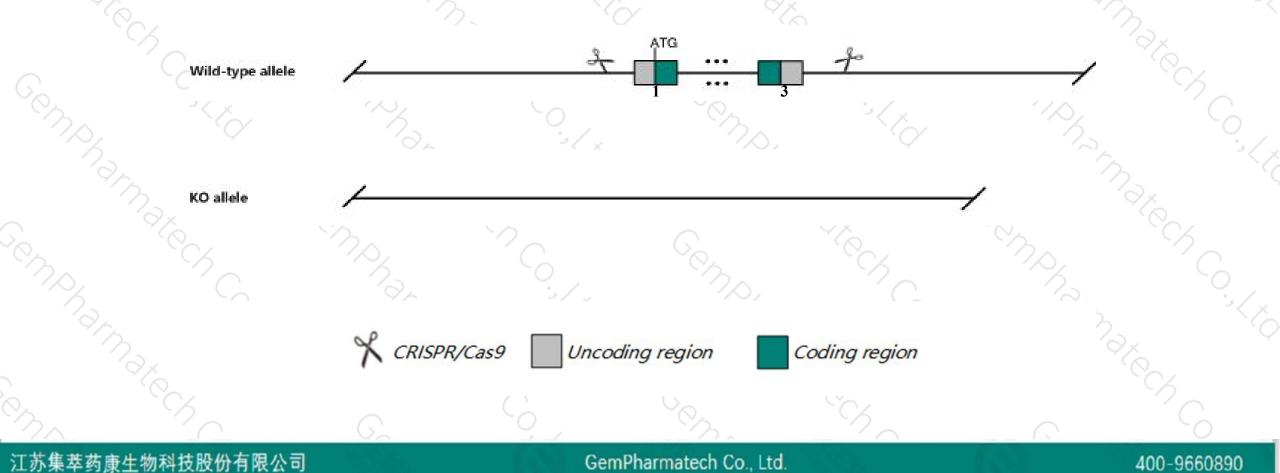


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# **Knockout** strategy



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





- The Myog gene has 1 transcript. According to the structure of Myog gene, exon1-exon3 of Myog-201 (ENSMUST00000027730.5) transcript is recommended as the knockout region. The region contains all 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 *Myog* gene. The brief process is as follows: CRISPR/Cas9 system

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- According to the existing MGI data, Homozygotes for targeted null mutations exhibit a severe reduction in muscle mass associated with delayed primary myogenesis and very little secondary myofiber formation, defects of the thoracic skeleton, and perinatal death.
- The Myog 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 the gene knockout on gene transcription, RNA splicing and protein translation cannot be predicted at the existing technology level.

Notice

### **Gene information (NCBI)**



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#### Myog myogenin [Mus musculus (house mouse)]

Gene ID: 17928, updated on 9-Apr-2019

#### Summary

Official SymbolMyog provided by MGIOfficial Full Namemyogenin provided by MGIPrimary sourceMGI:MGI:97276See relatedEnsembl:ENSMUSG0000026459Gene typeprotein codingRefSeq statusVALIDATEDOrganismMus musculusLineageEukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Rolenstia; Myomorpha;<br/>Muroidea; Murinae; Mus; MusAlso knownasMYF4, bHLHc3, myoExpressionBiased expression in limb E14.5 (RPKM 55.9), CNS E11.5 (RPKM 6.5) and 1 other tissueSee more<br/>human all

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# **Transcript information (Ensembl)**

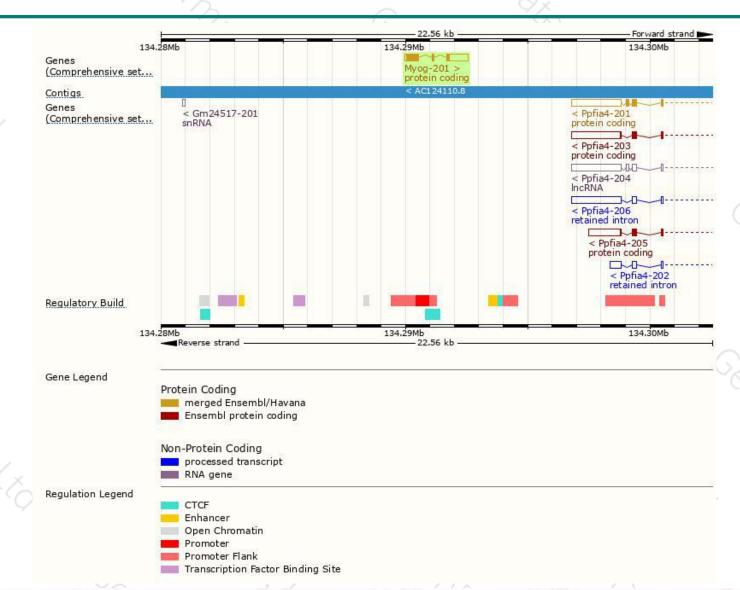


The gene has 1 transcript, and the transcript is shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags		
lyog-201	ENSMUST00000027730.5		<u>224aa</u>	Protein coding	CCDS15306 P12979		TSL:1 GENCODE basic APPRIS P		
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strategy	v is based on the design of	Myog-	-201 trans	script, I he trans	cription is sho	own below			
				2.56 kb	~		Forward strand		
p-201 > ein coding									
				1	'∕>				
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### **Genomic location distribution**





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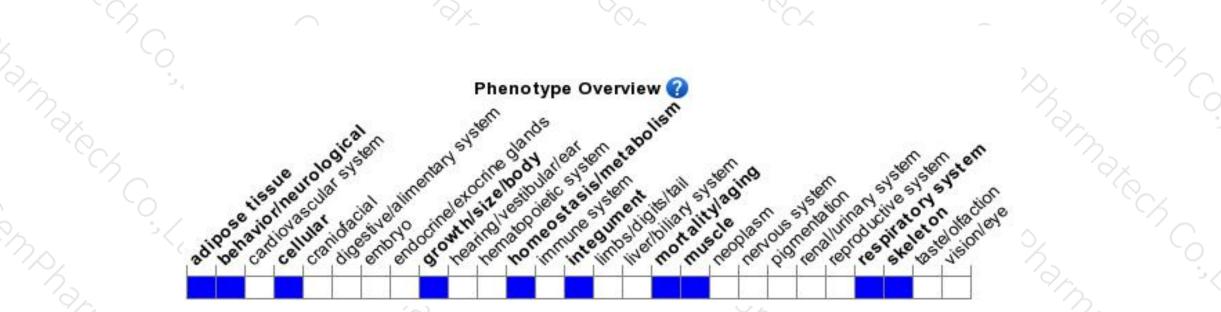
### **Protein domain**



3.											$\sim$	4		
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	SMART	Myogeni	e basie muse	le-specifi	ic protein	-	loop-helix DN yc-type, basic	3377	and markers					2
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~??;	PROSITE profiles					Myc-t	ype, basic he	lix-loop-hel	ix (bHLH) do	main				0
	PANTHER.	Myogenic factor												
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Sh,	CDD					Myc-ty	pe, basic heli	x-loop-helix	(bHLH) don	iain				
	All sequence SNPs/i	Sequer	ice variants	(dbSNP	and all oth	er sources	5)		Ŭ			- 01	Ì	
	Variant Legend	sy	nonymous	variant										
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### 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, Homozygotes for targeted null mutations exhibit a severe reduction in muscle mass associated with delayed primary myogenesis and very little secondary myofiber formation, defects of the thoracic skeleton, and perinatal death.

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If you have any questions, you are welcome to inquire. Tel: 400-9660890



