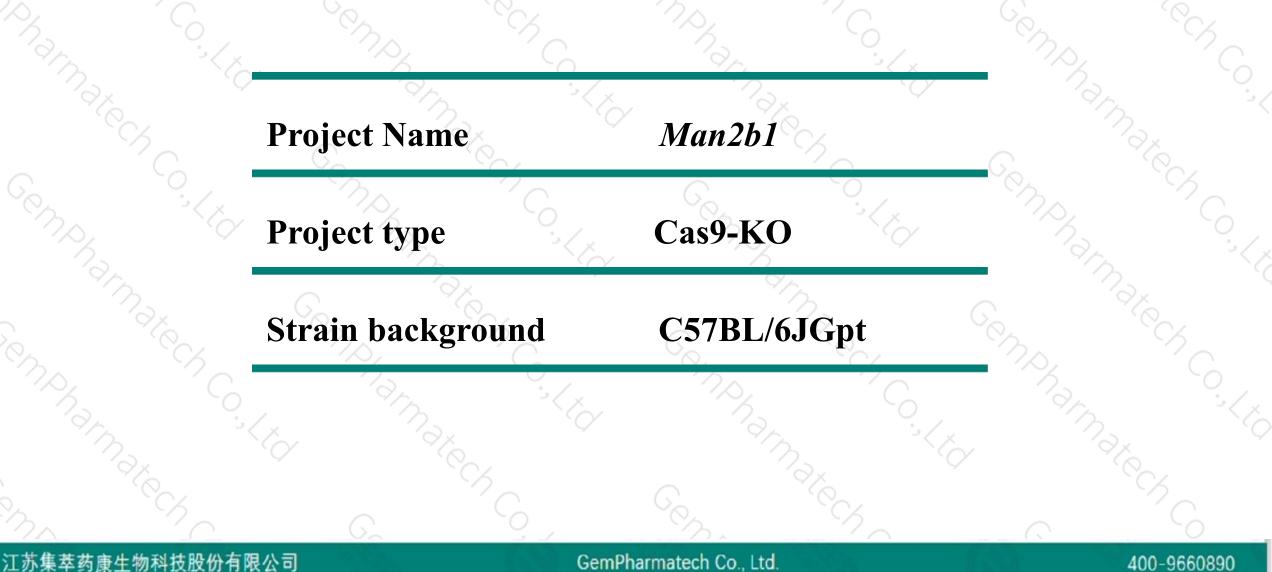


Man2b1 Cas9-KO Strategy

Designer: Reviewer: Design Date: Yang Zeng Jing Jin 2019-10-15

Project Overview





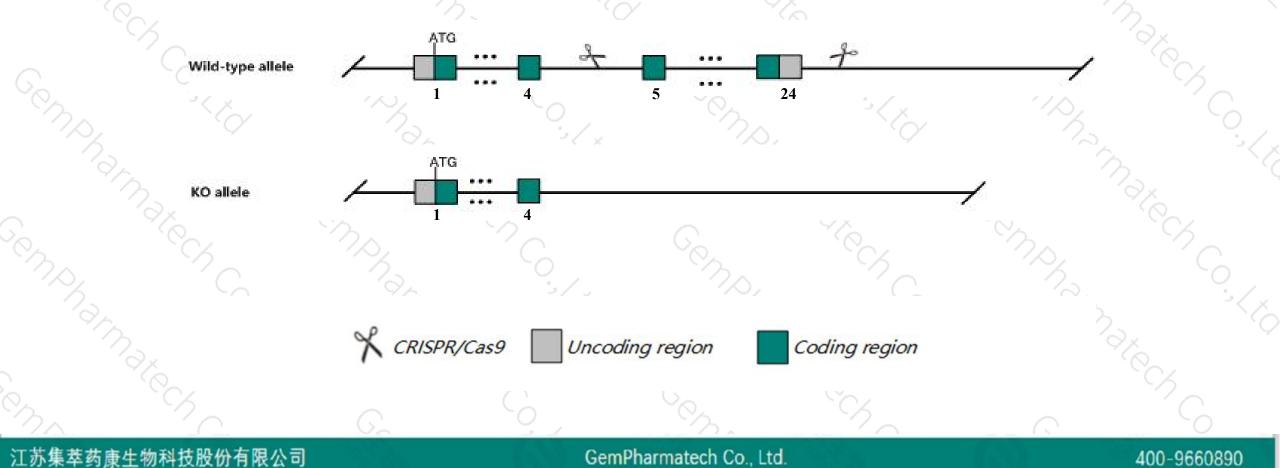
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Knockout strategy



This model will use CRISPR/Cas9 technology to edit the Man2b1 gene. The schematic diagram is as follows:





- The Man2b1 gene has 6 transcripts. According to the structure of Man2b1 gene, exon5-exon24 of Man2b1-201 (ENSMUST00000034121.10) 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 Man2b1 gene. The brief process is as follows: CRISPR/Cas9 syste



- According to the existing MGI data, Mice homozygous for a knock-out allele show urinary oligosaccharide excretion, storage of neutral sugars, oligosaccharide buildup in spleen, kidney, liver, testis and brain, clear vacuoles and axonal spheroids in CNS, PNS and other cell types, behavioralchanges, and enhanced long-term potentiation.
- The Man2b1 gene is located on the Chr8. 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.

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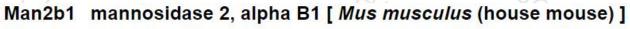
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Gene information (NCBI)



< ?



Gene ID: 17159, updated on 12-Aug-2019

Summary

Official Symbol Man2b1 provided by MGI Official Full Name mannosidase 2, alpha B1 provided by MGI Primary source MGI:MGI:107286 See related Ensembl:ENSMUSG00000005142 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 LAMAN; AW107687 Expression Ubiguitous expression in genital fat pad adult (RPKM 43.7), spleen adult (RPKM 42.9) and 28 other tissues See more Orthologs human all Chromosome 8 - NC_000074.6 [85071486) 85128627 Zfp791 🧄 Dhes Man2b1 Gm42031 🧄 Hdr-83 Har83os

Transcript information (Ensembl)



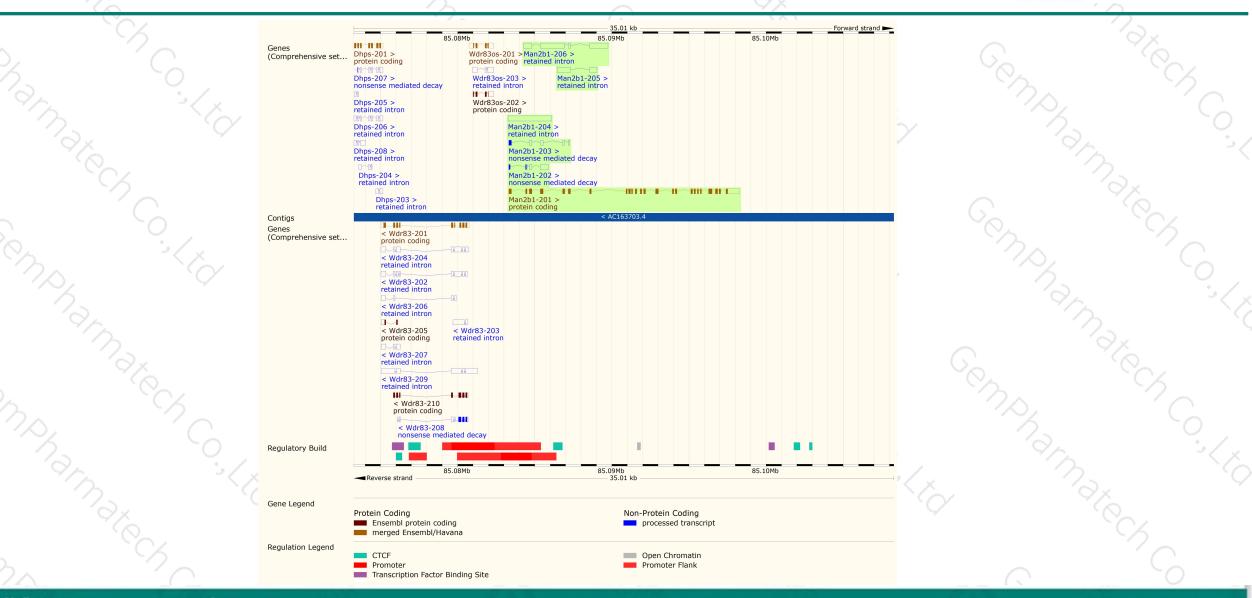
The gene has 6 transcripts, all transcripts are shown below:

Transcript ID 💧	bp 🖕	Protein 💧	Translation ID	Biotype	CCDS	UniProt 🖕	Flags		
ENSMUST0000034121.10	3822	<u>1013aa</u>	ENSMUSP0000034121.9	Protein coding	<u>CCDS22494</u> &	<u>009159</u> &	TSL:1 GENCODE basic APPRIS P1		
ENSMUST00000209264.1	9 <mark>1</mark> 2	<u>47aa</u>	ENSMUSP00000147441.1	Nonsense mediated decay	-20	A0A1B0GRA4	TSL:3		
ENSMUST00000209361.1	793	<u>54aa</u>	ENSMUSP00000147350.1	Nonsense mediated decay	-	<u>A0A1B0GR27</u> &	TSL:3		
ENSMUST00000211379.1	3 <mark>4</mark> 59	No protein	-	Retained intron		-	TSL:1		
ENSMUST00000210991.1	2820	No protein	-	Retained intron	-	-	TSL:NA		
ENSMUST00000211223.1	1341	1 No protein -		Retained intron			TSL:1		
	ENSMUST0000034121.10 ENSMUST00000209264.1 ENSMUST00000209361.1 ENSMUST00000211379.1 ENSMUST00000210991.1	ENSMUST0000034121.10 3822 ENSMUST00000209264.1 912 ENSMUST00000209361.1 793 ENSMUST00000211379.1 3459 ENSMUST00000210991.1 2820	ENSMUST0000034121.10 3822 1013aa ENSMUST0000209264.1 912 47aa ENSMUST0000209361.1 793 54aa ENSMUST0000211379.1 3459 No protein ENSMUST0000210991.1 2820 No protein	ENSMUST0000034121.00 3822 1013aa ENSMUSP0000034121.9 ENSMUST0000209264.1 912 47aa ENSMUSP0000147441.1 ENSMUST0000209361.1 793 54aa ENSMUSP0000147350.1 ENSMUST0000211379.1 3459 No protein - ENSMUST0000210991.1 2820 No protein -	ENSMUST0000034121.0038221013aaENSMUSP0000034121.90Protein codingENSMUST0000209264.191247aaENSMUSP0000147441.1Nonsense mediated decayENSMUST0000209361.179354aaENSMUSP0000147350.1Nonsense mediated decayENSMUST0000211379.13459No protein-Retained intronENSMUST0000210991.12820No protein-Retained intron	ENSMUST0000034121.1038221013aaENSMUSP000034121.9Protein codingCCDS22494 @ENSMUST0000209264.191247aaENSMUSP0000147441.1Nonsense mediated decay-ENSMUST0000209361.179354aaENSMUSP0000147350.1Nonsense mediated decay-ENSMUST0000211379.13459No protein-Retained intron-ENSMUST0000210991.12820No protein-Retained intron-	ENSMUST0000034121.1038221013aaENSMUSP000034121.9Protein codingCCDS22494009159&ENSMUST0000209264.191247aaENSMUSP000014744.1Nonsense mediated decay-A0A1B0GRA4&ENSMUST0000209361.179354aaENSMUSP0000147350.1Nonsense mediated decay-A0A1B0GR27&ENSMUST0000211379.13459No protein-Retained intronENSMUST0000210991.12820No protein-Retained intron		

The strategy is based on the design of Man2b1-201 transcript, The transcription is shown below



Genomic location distribution



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Protein domain



>~										19Z	
	ENSMUSP00000034 Low complexity (Seg)	-							-		
	Cleavage site (Sign										<u> </u>
	Superfamily	Glycoside hydrol	ase/deacetylase, b	eta/alpha-barrel			itarotase-like domain sup				0
	SMART					~~	7/38, central domain sup	perfamily			24
	Pfam				-	e hydrolase family 38,					
	Plaili	Glycoside hyd	rolase family 38, N	-terminal domain	Glycosid	e hydrolase family 38				Glycosyl hydi	rolases far
	PANTHER						Glycosyl hyd	Irolase family 38, C	2-terminal		
		PTHR11607:SF3 PTHR11607									
	Gene3D		olase 38. N-termir	nal domain superfamily	,		2.70.98.30			2.60.40.1360	
		0.,000.000.000,0				Glycosyl h	iydrolase, all-beta			2.000.1012000	
					Glycoside hydro	lase family 38, centra					
	CDD	cd10810									
	All sequence SNPs/i	Sequence variants (dbS	5NP and all other	sources)	T				1 1 1	I III	1
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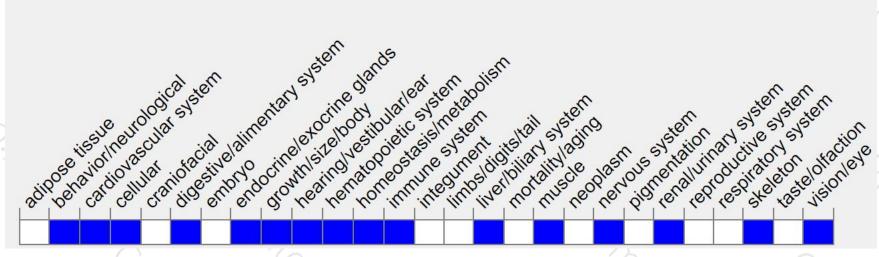
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Mouse phenotype description(MGI)

Phenotype Overview 🕜



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 knock-out allele show urinary oligosaccharide excretion, storage of neutral sugars, oligosaccharide buildup in spleen, kidney, liver, testis and brain, clear vacuoles and axonal spheroids in CNS, PNS and other cell types, behavioralchanges, and enhanced long-term potentiation.

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



