

# ***Pik3r2 Cas9-KO Strategy***

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Design Date: 2019-9-18

# Project Overview

**Project Name**

*Pik3r2*

**Project type**

**Cas9-KO**

**Strain background**

**C57BL/6JGpt**

# Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Pik3r2* gene. The schematic diagram is as follows:



- The *Pik3r2* gene has 6 transcripts. According to the structure of *Pik3r2* gene, exon2 of *Pik3r2-201* (ENSMUST00000034296.14) transcript is recommended as the knockout region. The region contains start codon ATG. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Pik3r2* gene. The brief process is as follows: CRISPR/Cas9 system

- According to the existing MGI data, Mice homozygous for disruptions in this gene have lower blood glucose levels both when fed and after fasting. Insulin sensitivity is improved as well.
- There is a risk of recognizing a new ATG to form an unknown protein after knocking out ATG.
- Transcripts 203, 204, 205 may not be affected.
- The knockout region is about 1.3 kb away from the 5th end of the 2010320M18Rik gene, which may affect the 5-terminal regulation of the gene.
- The *Pik3r2* 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.

# Gene information (NCBI)

## Pik3r2 phosphoinositide-3-kinase regulatory subunit 2 [ *Mus musculus* (house mouse) ]

Gene ID: 18709, updated on 12-Aug-2019

### Summary

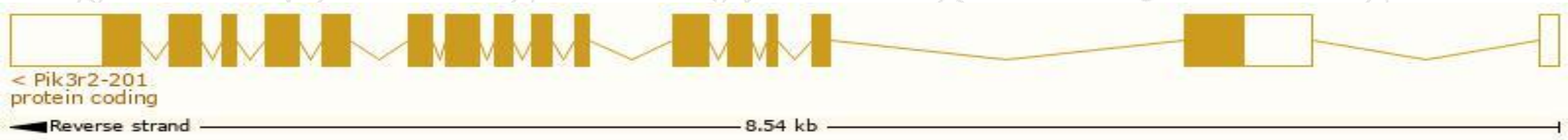
Official Symbol	Pik3r2 provided by <a href="#">MGI</a>
Official Full Name	phosphoinositide-3-kinase regulatory subunit 2 provided by <a href="#">MGI</a>
Primary source	<a href="#">MGI:MGI:1098772</a>
See related	<a href="#">Ensembl:ENSMUSG00000031834</a>
Gene type	protein coding
RefSeq status	VALIDATED
Organism	<a href="#">Mus musculus</a>
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	p85beta
Expression	Ubiquitous expression in ovary adult (RPKM 65.5), duodenum adult (RPKM 57.1) and 28 other tissues <a href="#">See more</a>
Orthologs	<a href="#">human</a> <a href="#">all</a>

# Transcript information (Ensembl)

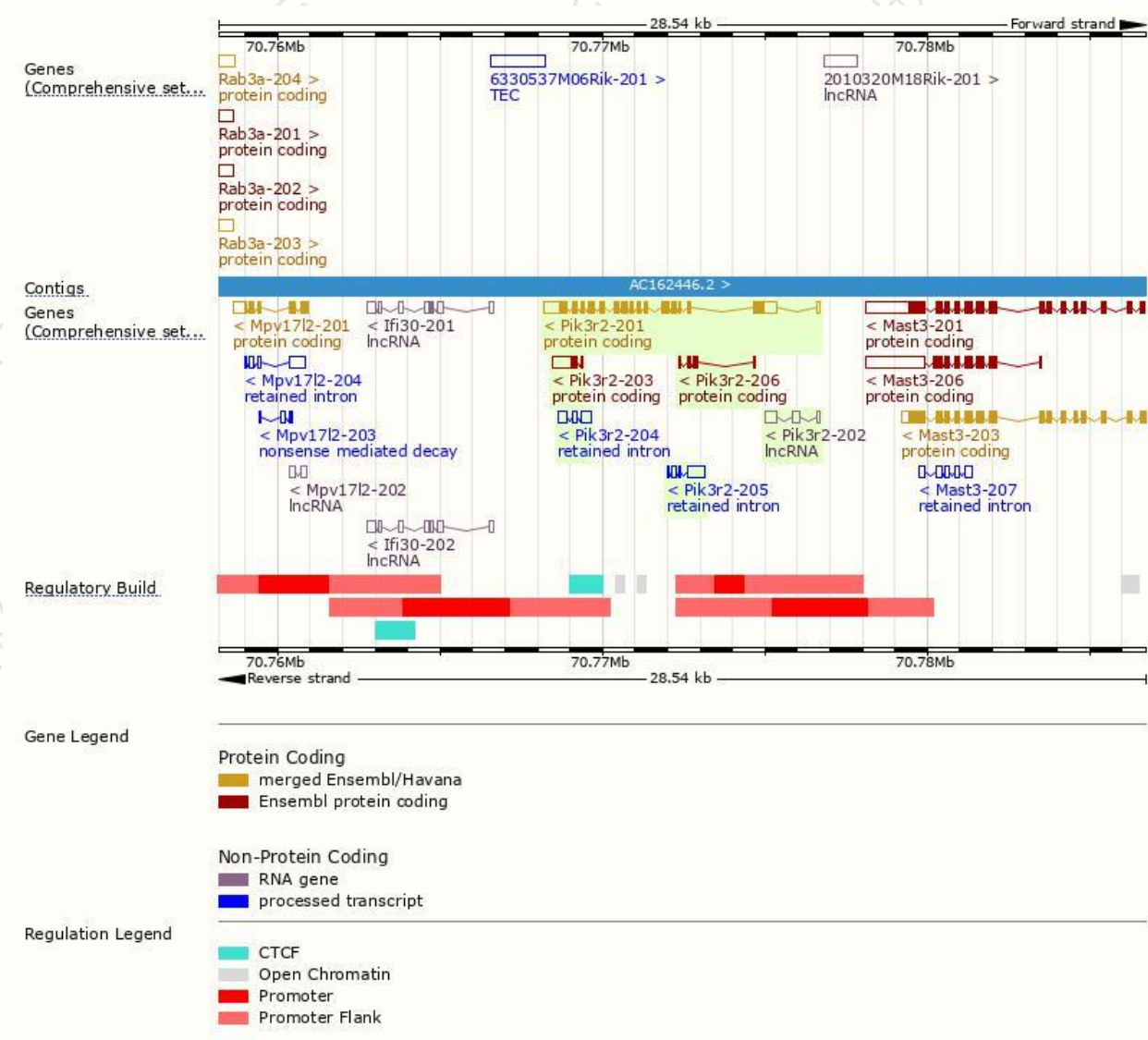
The gene has 6 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Pik3r2-201	<a href="#">ENSMUST00000034296.14</a>	3165	<a href="#">722aa</a>	Protein coding	<a href="#">CCDS22381</a>	<a href="#">O08908</a>	TSL:1 GENCODE basic APPRIS P1
Pik3r2-203	<a href="#">ENSMUST00000143785.1</a>	813	<a href="#">71aa</a>	Protein coding	-	<a href="#">F7CB91</a>	CDS 5' incomplete TSL:3
Pik3r2-206	<a href="#">ENSMUST00000154685.1</a>	250	<a href="#">84aa</a>	Protein coding	-	<a href="#">F6R2V5</a>	5' and 3' truncations in transcript evidence prevent annotation of the start and the end of the CDS. CDS 5' and 3' incomplete TSL:1
Pik3r2-202	<a href="#">ENSMUST00000142370.1</a>	626	No protein	Processed transcript	-	-	TSL:3
Pik3r2-205	<a href="#">ENSMUST00000152545.1</a>	783	No protein	Retained intron	-	-	TSL:5
Pik3r2-204	<a href="#">ENSMUST00000146707.1</a>	746	No protein	Retained intron	-	-	TSL:2

The strategy is based on the design of *Pik3r2-201* transcript,The transcription is shown below



# Genomic location distribution



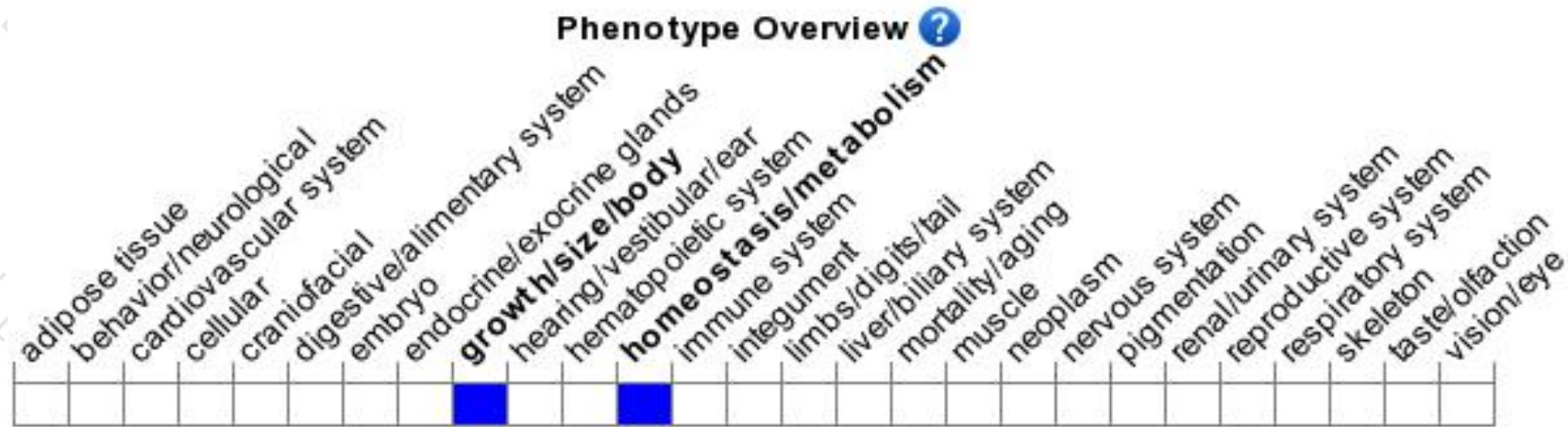
# Protein domain



集萃药康  
GemPharmatech



# 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 have lower blood glucose levels both when fed and after fasting. Insulin sensitivity is improved as well.

If you have any questions, you are welcome to inquire.

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