

# *Smyd1* Cas9-KO Strategy

**Designer:**

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**Design Date:**

**2019-9-20**

# Project Overview

**Project Name**

*Smyd1*

**Project type**

**Cas9-KO**

**Strain background**

**C57BL/6JGpt**

# Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Smyd1* gene. The schematic diagram is as follows:



- The *Smyd1* gene has 6 transcripts. According to the structure of *Smyd1* gene, exon2-exon3 of *Smyd1-201* (ENSMUST00000074301.9) transcript is recommended as the knockout region. The region contains 391bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Smyd1* gene. The brief process is as follows: CRISPR/Cas9 system

- According to the existing MGI data, Homozygous mutation of this gene results in embryonic lethality at E10.5. Mutant embryos exhibit an enlarged heart and developmental abnormalities of the right ventricle.
- The *Smyd1* gene is located on the Chr6. 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)

## Smyd1 SET and MYND domain containing 1 [Mus musculus (house mouse)]

Gene ID: 12180, updated on 9-Apr-2019

### Summary



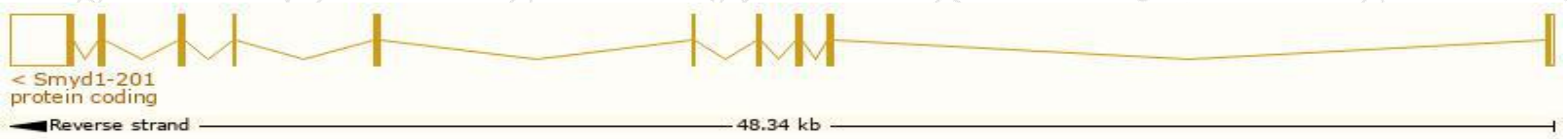
<b>Official Symbol</b>	Smyd1 provided by <a href="#">MGI</a>
<b>Official Full Name</b>	SET and MYND domain containing 1 provided by <a href="#">MGI</a>
<b>Primary source</b>	<a href="#">MGI:MGI:104790</a>
<b>See related</b>	<a href="#">Ensembl:ENSMUSG00000055027</a>
<b>Gene type</b>	protein coding
<b>RefSeq status</b>	VALIDATED
<b>Organism</b>	<a href="#">Mus musculus</a>
<b>Lineage</b>	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
<b>Also known as</b>	4632404M21Rik, Bop, C78565, Zmynd18
<b>Expression</b>	Biased expression in heart adult (RPKM 89.8), mammary gland adult (RPKM 9.3) and 1 other tissue <a href="#">See more</a>
<b>Orthologs</b>	<a href="#">human</a> <a href="#">all</a>

# Transcript information (Ensembl)

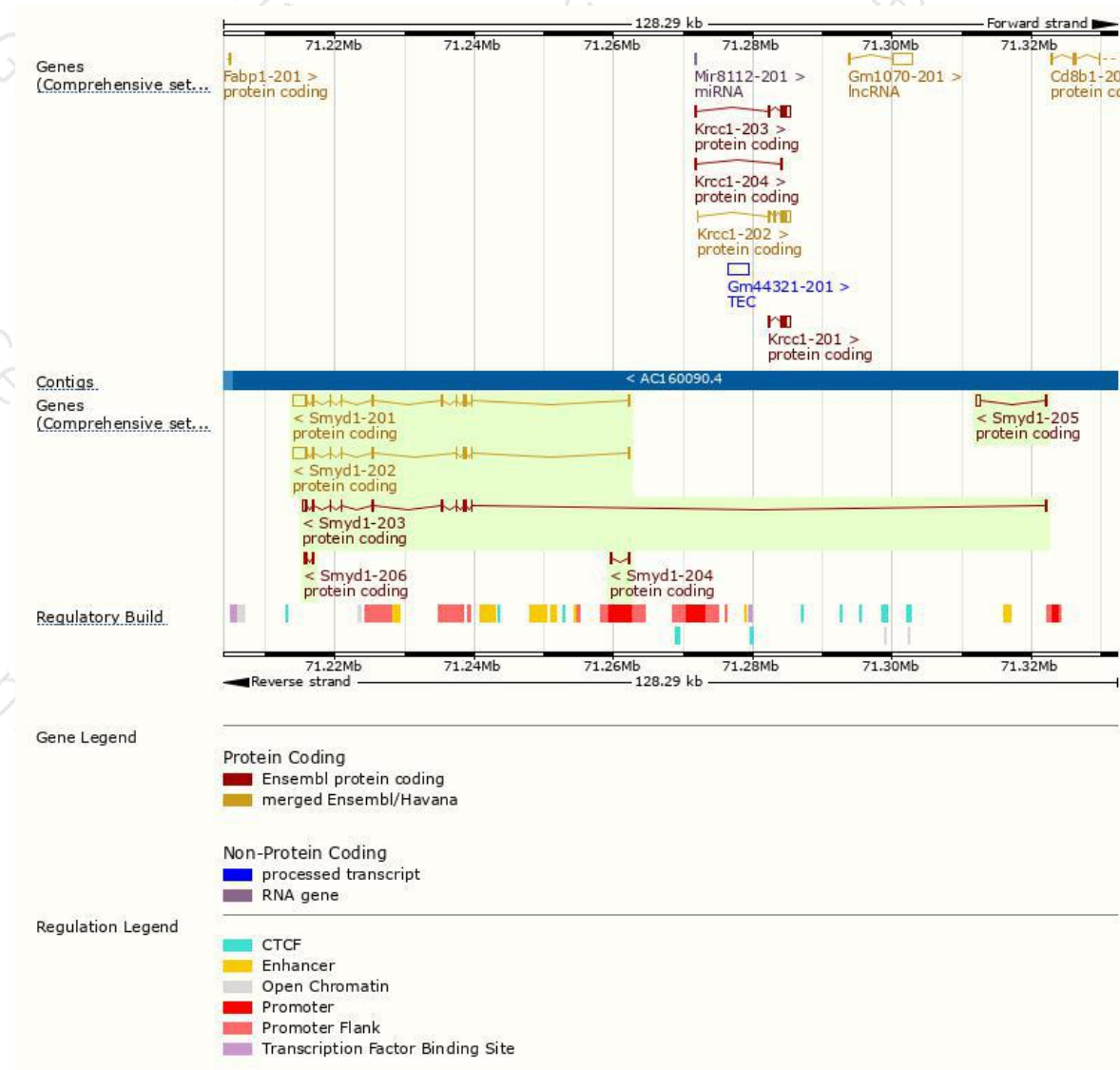
The gene has 6 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Smyd1-201	<a href="#">ENSMUST00000074301.9</a>	3361	<a href="#">490aa</a>	Protein coding	<a href="#">CCDS51805</a>	<a href="#">P97443</a>	TSL:1 GENCODE basic APPRIS ALT 1
Smyd1-202	<a href="#">ENSMUST00000114186.8</a>	3292	<a href="#">477aa</a>	Protein coding	<a href="#">CCDS20227</a>	<a href="#">P97443 Q3UQT9</a>	TSL:1 GENCODE basic APPRIS P3
Smyd1-203	<a href="#">ENSMUST00000114188.2</a>	2064	<a href="#">456aa</a>	Protein coding	-	<a href="#">G5E8R7</a>	TSL:5 GENCODE basic
Smyd1-205	<a href="#">ENSMUST00000173297.1</a>	947	<a href="#">21aa</a>	Protein coding	-	<a href="#">G3UXZ0</a>	TSL:5 GENCODE basic
Smyd1-206	<a href="#">ENSMUST00000173730.1</a>	428	<a href="#">58aa</a>	Protein coding	-	<a href="#">G3UZ94</a>	CDS 5' incomplete TSL:5
Smyd1-204	<a href="#">ENSMUST00000129630.2</a>	376	<a href="#">69aa</a>	Protein coding	-	<a href="#">Q8BMV4</a>	TSL:1 GENCODE basic

The strategy is based on the design of *Smyd1-201* transcript,The transcription is shown below

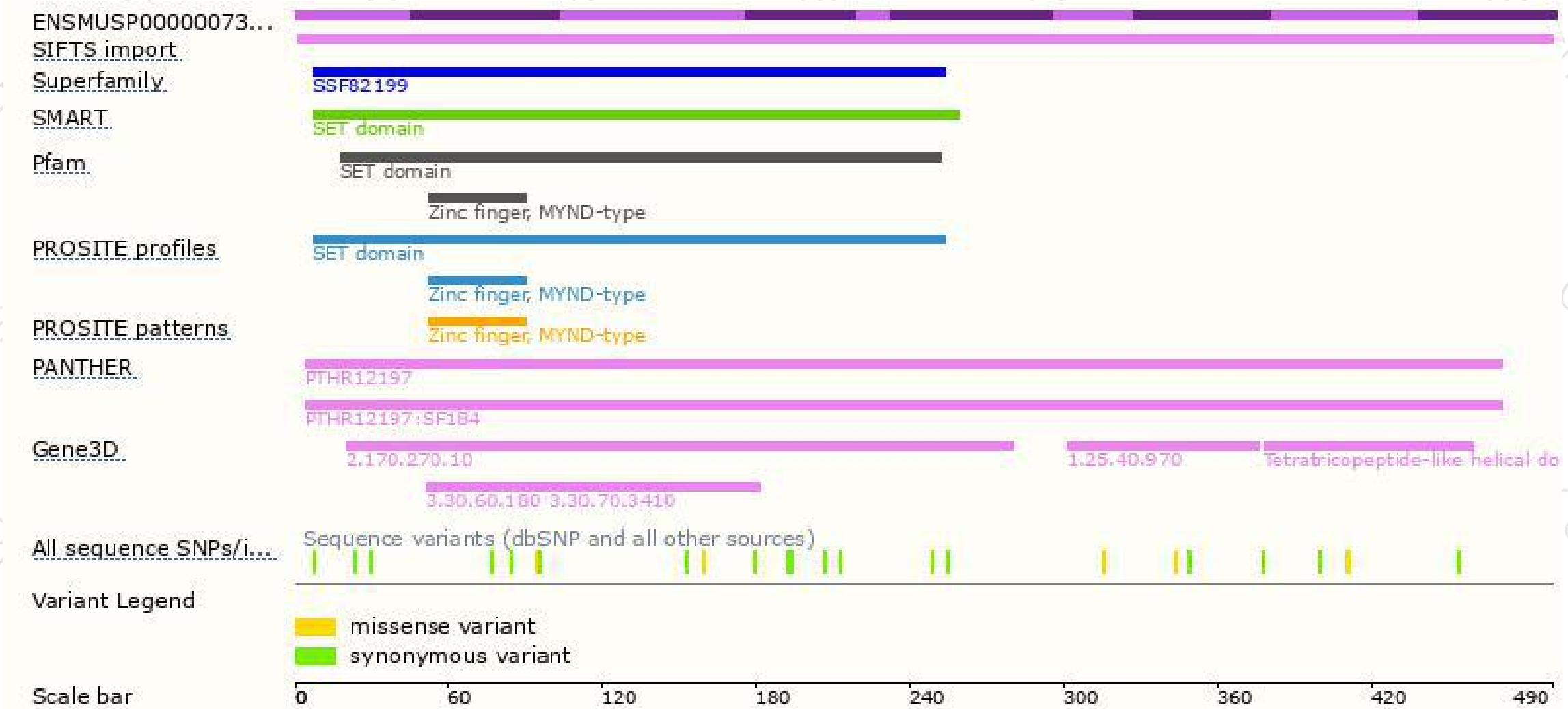


# Genomic location distribution

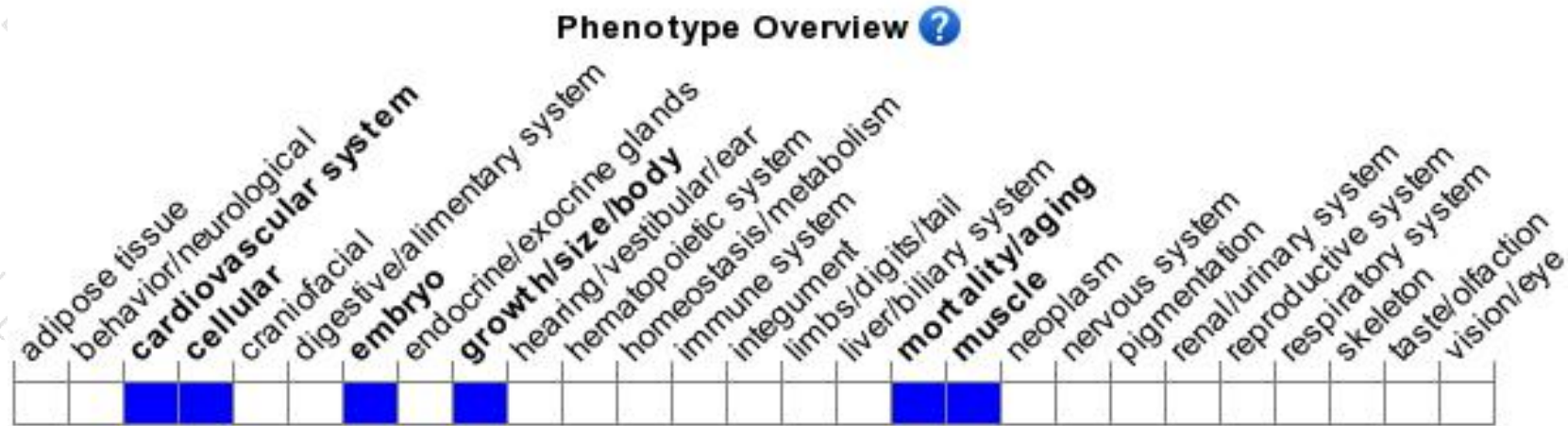




# Protein domain



# 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, Homozygous mutation of this gene results in embryonic lethality at E10.5. Mutant embryos exhibit an enlarged heart and developmental abnormalities of the right ventricle.

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

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