

# *Trp53bp1* Cas9-KO Strategy

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**Reviewer:**

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# Project Overview

**Project Name**

***Trp53bp1***

**Project type**

**Cas9-KO**

**Strain background**

**C57BL/6JGpt**

# Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Trp53bp1* gene. The schematic diagram is as follows:



- The *Trp53bp1* gene has 19 transcripts. According to the structure of *Trp53bp1* gene, exon5-exon6 of *Trp53bp1-202* (ENSMUST00000110648.7) transcript is recommended as the knockout region. The region contains 284bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Trp53bp1* gene. The brief process is as follows: CRISPR/Cas9 system

- According to the existing MGI data, Homozygous mutations in this gene result in growth retardation, immunodeficiency, thymic hypoplasia, and increased incidence of thymic lymphomas.
- Transcript *Trp53bp1-215* may not be affected.
- The *Trp53bp1* gene is located on the Chr2. 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)

## Trp53bp1 transformation related protein 53 binding protein 1 [ *Mus musculus* (house mouse) ]

Gene ID: 27223, updated on 12-Aug-2019

### Summary



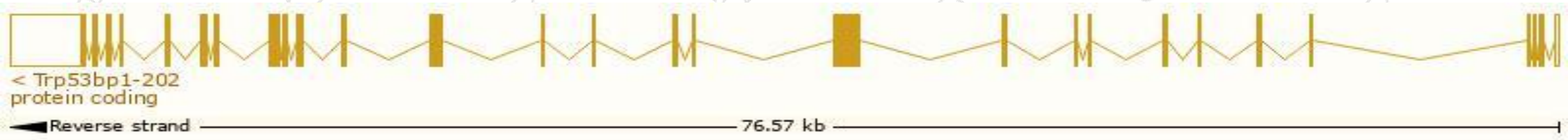
<b>Official Symbol</b>	Trp53bp1 provided by <a href="#">MGI</a>
<b>Official Full Name</b>	transformation related protein 53 binding protein 1 provided by <a href="#">MGI</a>
<b>Primary source</b>	<a href="#">MGI:MGI:1351320</a>
<b>See related</b>	<a href="#">Ensembl:ENSMUSG00000043909</a>
<b>Gene type</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>	53BP1; m53BP1; p53BP1; Tp53bp1
<b>Expression</b>	Broad expression in CNS E14 (RPKM 21.5), whole brain E14.5 (RPKM 20.5) and 24 other tissues <a href="#">See more</a>
<b>Orthologs</b>	<a href="#">human</a> <a href="#">all</a>

# Transcript information (Ensembl)

The gene has 19 transcripts,all transcripts are shown below:

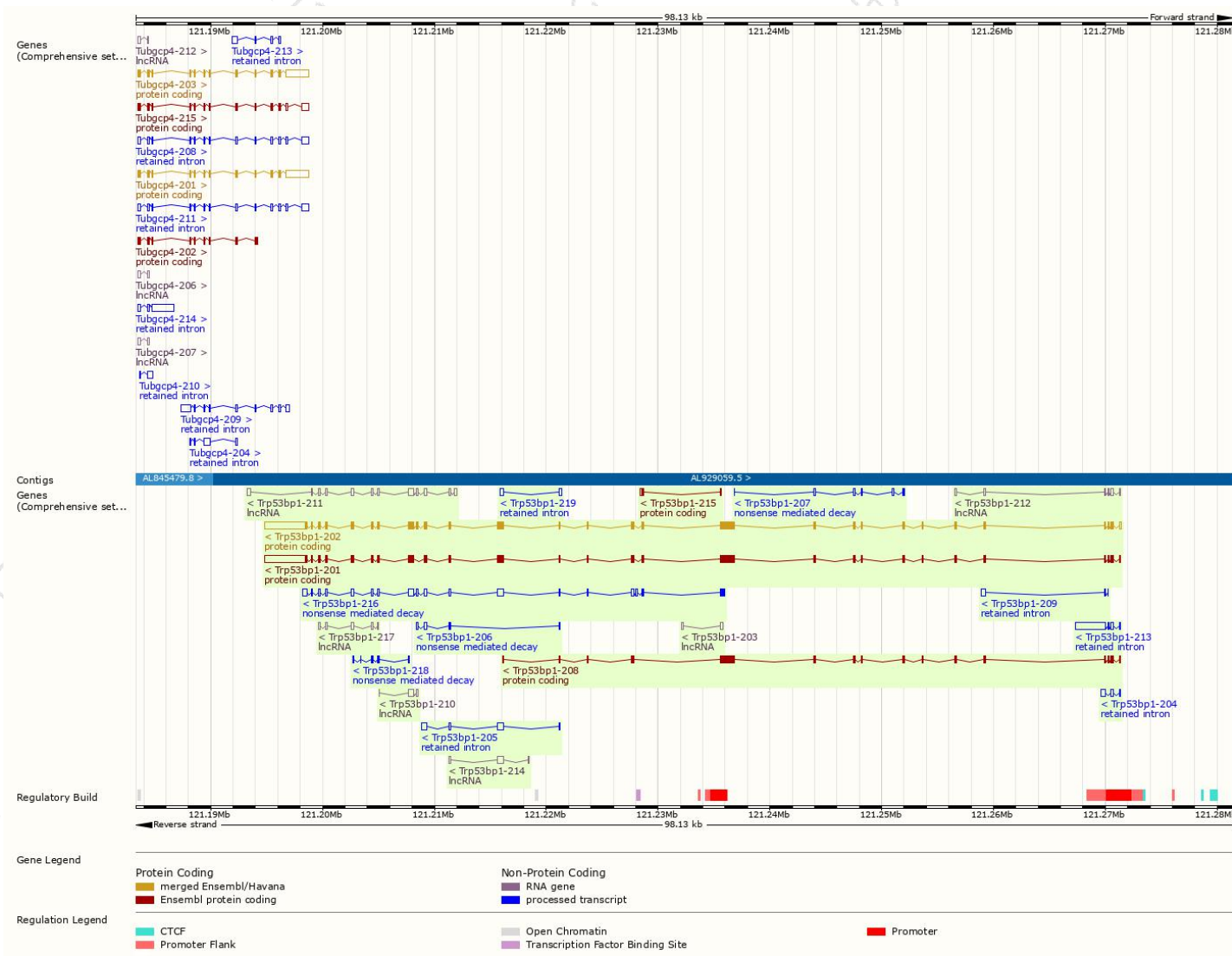
Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Trp53bp1-202	<a href="#">ENSMUST00000110648.7</a>	9621	<a href="#">1969aa</a>	Protein coding	<a href="#">CCDS50684</a>	<a href="#">P70399</a>	TSL:5 Gencode basic APPRIS P3
Trp53bp1-201	<a href="#">ENSMUST00000110647.7</a>	9405	<a href="#">1919aa</a>	Protein coding	<a href="#">CCDS71125</a>	-	TSL:1 Gencode basic APPRIS ALT2
Trp53bp1-208	<a href="#">ENSMUST00000131245.1</a>	3098	<a href="#">1018aa</a>	Protein coding	-	<a href="#">A2AU90</a>	CDS 3' incomplete TSL:1
Trp53bp1-215	<a href="#">ENSMUST00000142400.1</a>	456	<a href="#">81aa</a>	Protein coding	-	<a href="#">F6S5E4</a>	CDS 5' incomplete TSL:2
Trp53bp1-216	<a href="#">ENSMUST00000147540.7</a>	3983	<a href="#">190aa</a>	Nonsense mediated decay	-	<a href="#">F6QNC8</a>	CDS 5' incomplete TSL:5
Trp53bp1-207	<a href="#">ENSMUST00000129752.1</a>	769	<a href="#">59aa</a>	Nonsense mediated decay	-	<a href="#">F6VCK5</a>	CDS 5' incomplete TSL:5
Trp53bp1-218	<a href="#">ENSMUST00000154426.1</a>	598	<a href="#">166aa</a>	Nonsense mediated decay	-	<a href="#">F6ZRL3</a>	CDS 5' incomplete TSL:5
Trp53bp1-206	<a href="#">ENSMUST00000124554.1</a>	594	<a href="#">48aa</a>	Nonsense mediated decay	-	<a href="#">F7CE65</a>	CDS 5' incomplete TSL:5
Trp53bp1-213	<a href="#">ENSMUST00000140285.7</a>	3043	No protein	Retained intron	-	-	TSL:1
Trp53bp1-205	<a href="#">ENSMUST00000124411.7</a>	1241	No protein	Retained intron	-	-	TSL:3
Trp53bp1-204	<a href="#">ENSMUST00000124060.1</a>	643	No protein	Retained intron	-	-	TSL:3
Trp53bp1-209	<a href="#">ENSMUST00000131426.1</a>	536	No protein	Retained intron	-	-	TSL:3
Trp53bp1-219	<a href="#">ENSMUST00000156493.1</a>	505	No protein	Retained intron	-	-	TSL:3
Trp53bp1-211	<a href="#">ENSMUST00000135890.7</a>	2552	No protein	lncRNA	-	-	TSL:1
Trp53bp1-212	<a href="#">ENSMUST00000136617.7</a>	751	No protein	lncRNA	-	-	TSL:1
Trp53bp1-217	<a href="#">ENSMUST00000147554.1</a>	751	No protein	lncRNA	-	-	TSL:2
Trp53bp1-210	<a href="#">ENSMUST00000132812.1</a>	682	No protein	lncRNA	-	-	TSL:2
Trp53bp1-214	<a href="#">ENSMUST00000140582.1</a>	671	No protein	lncRNA	-	-	TSL:2
Trp53bp1-203	<a href="#">ENSMUST00000124031.1</a>	409	No protein	lncRNA	-	-	TSL:3

The strategy is based on the design of *Trp53bp1-202* transcript,The transcription is shown below



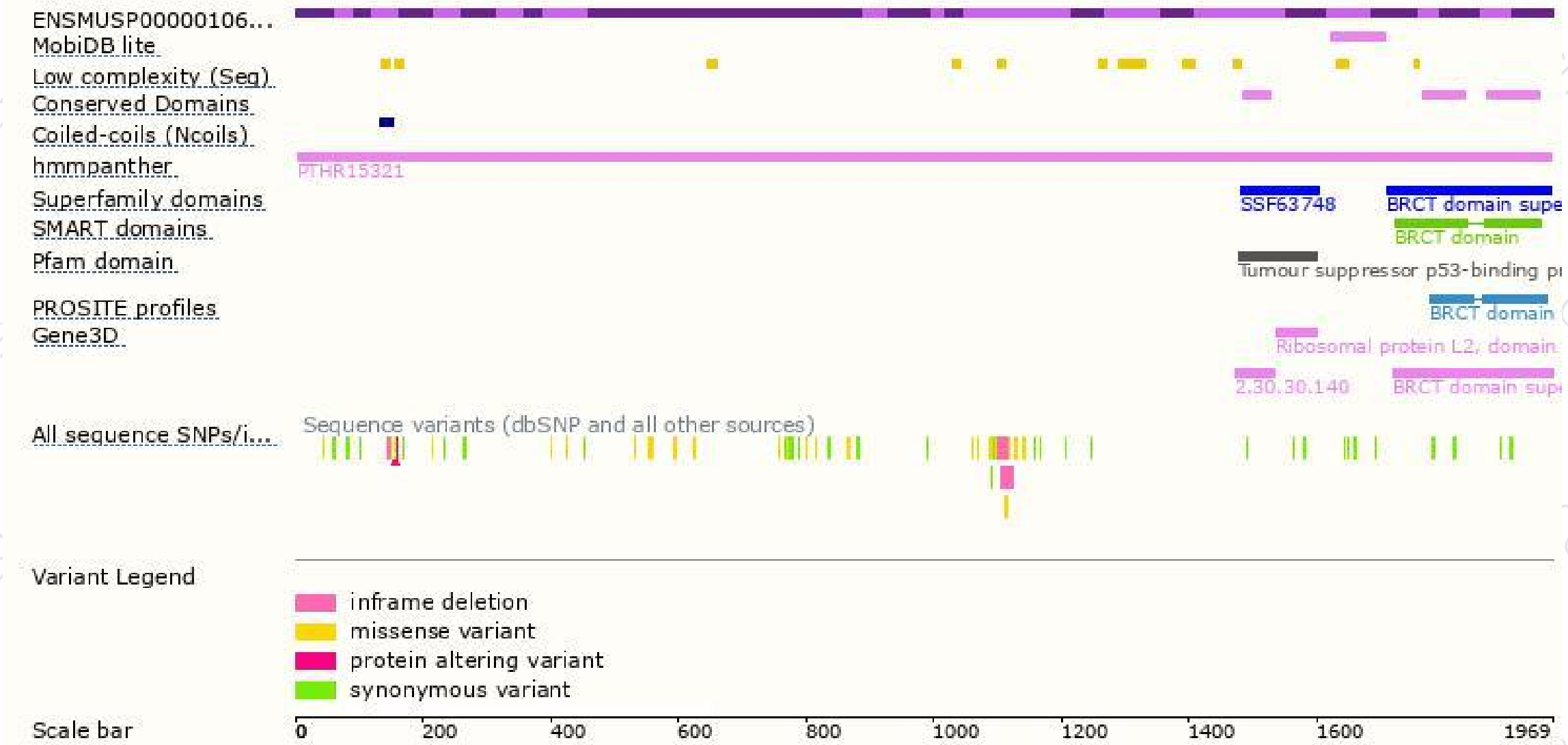


# Genomic location distribution

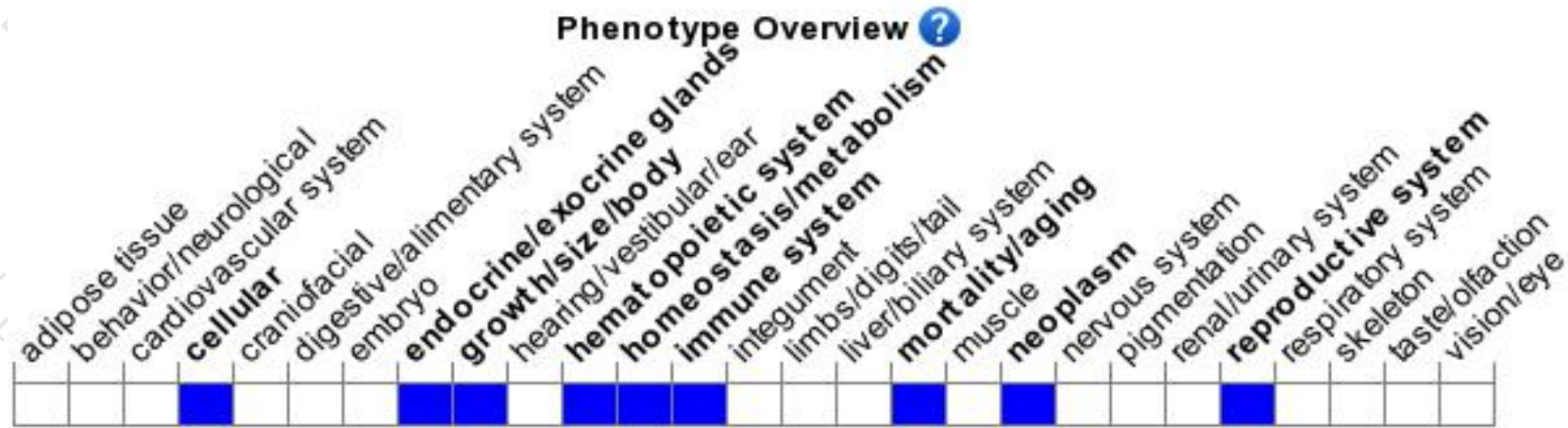




# Protein domain



# 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 mutations in this gene result in growth retardation, immunodeficiency, thymic hypoplasia, and increased incidence of thymic lymphomas.

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

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