

# *Stat6* Cas9-KO Strategy

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# Project Overview

**Project Name**

***Stat6***

**Project type**

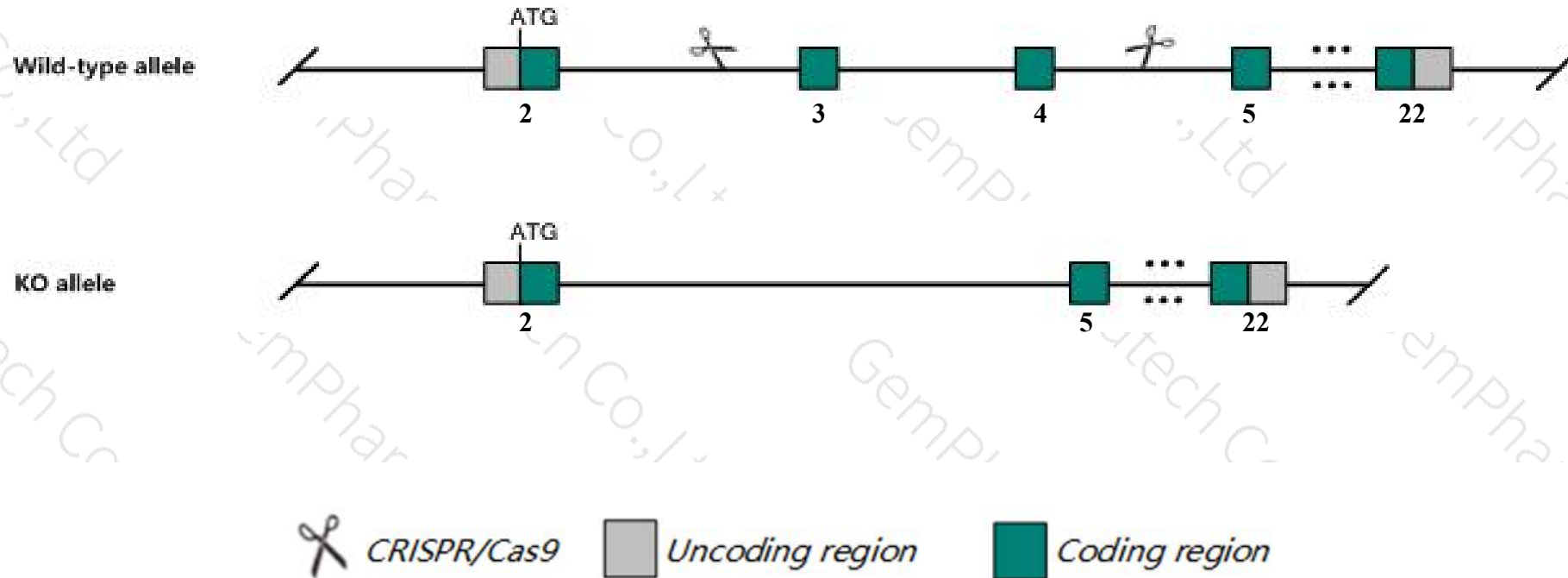
**Cas9-KO**

**Strain background**

**C57BL/6JGpt**

# Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Stat6* gene. The schematic diagram is as follows:



- The *Stat6* gene has 5 transcripts. According to the structure of *Stat6* gene, exon3-exon4 of *Stat6-201* (ENSMUST00000092074.11) transcript is recommended as the knockout region. The region contains 223bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Stat6* gene. The brief process is as follows: CRISPR/Cas9 system v

- According to the existing MGI data, Homozygotes for targeted null mutations exhibit impaired IL4 responses, including anti-IgM stimulated B cell proliferation, class switching to IgE, contact sensitivity, and Th2 cytokine production, and show increased resistance to certain infections.
- Transcript *Stat6*-203&204&205 may not be affected.
- The *Stat6* gene is located on the Chr10. 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)

## Stat6 signal transducer and activator of transcription 6 [Mus musculus (house mouse)]

Gene ID: 20852, updated on 2-Apr-2019

### Summary



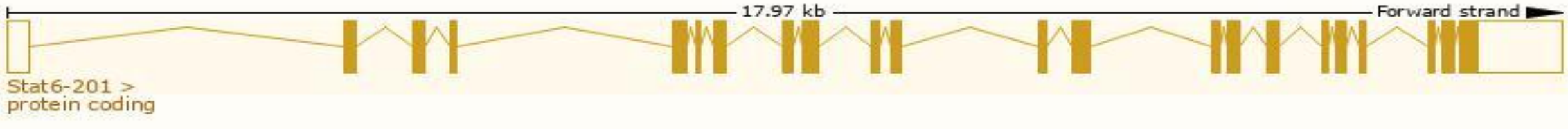
|                           |                                                                                                                                                                           |
|---------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Official Symbol</b>    | Stat6 provided by <a href="#">MGI</a>                                                                                                                                     |
| <b>Official Full Name</b> | signal transducer and activator of transcription 6 provided by <a href="#">MGI</a>                                                                                        |
| <b>Primary source</b>     | <a href="#">MGI:MGI:103034</a>                                                                                                                                            |
| <b>See related</b>        | <a href="#">Ensembl:ENSMUSG000000002147</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>Expression</b>         | Ubiquitous expression in spleen adult (RPKM 35.4), thymus adult (RPKM 34.3) and 24 other tissues <a href="#">See more</a>                                                 |
| <b>Orthologs</b>          | <a href="#">human</a> <a href="#">all</a>                                                                                                                                 |

# Transcript information (Ensembl)

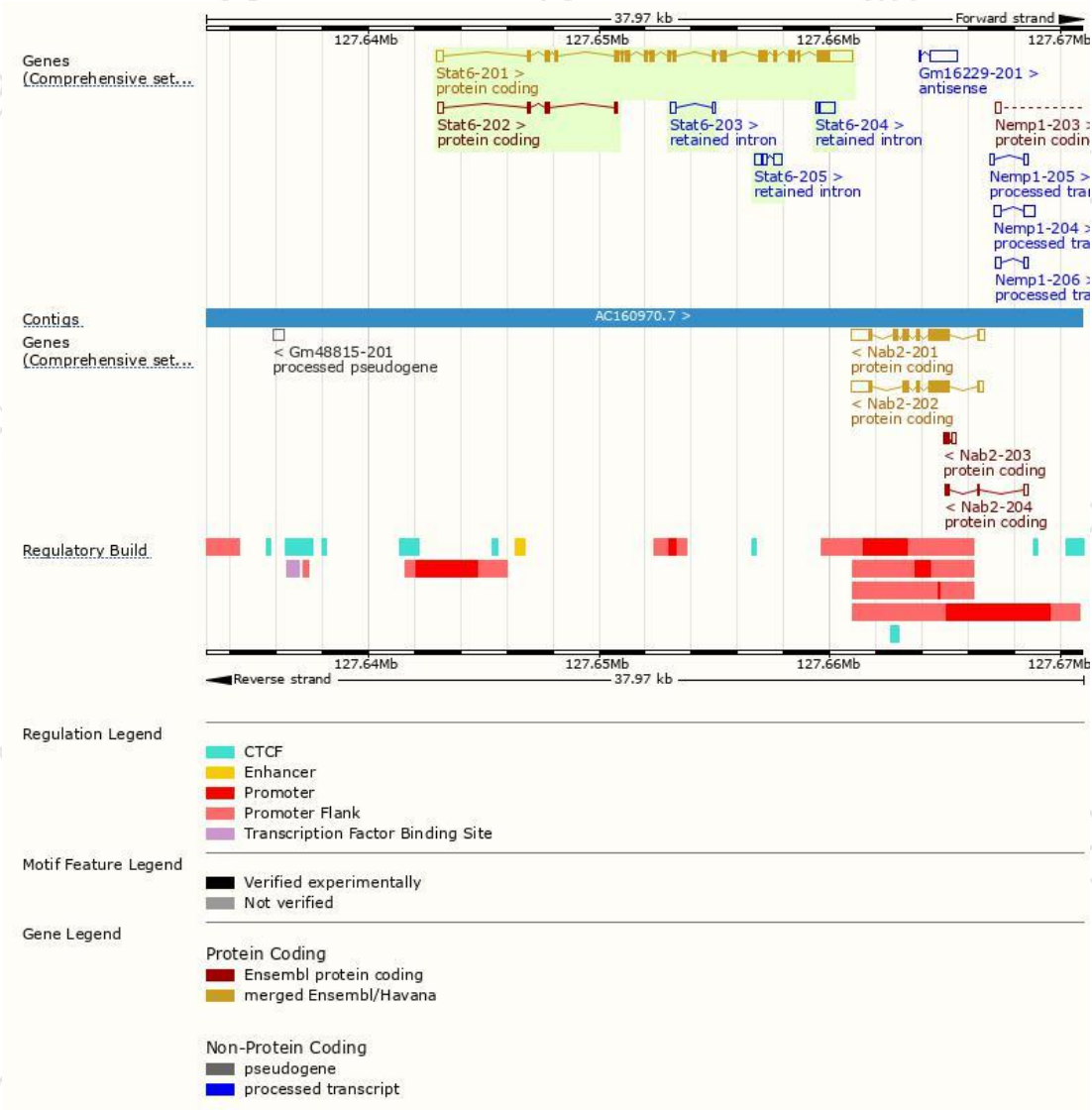
The gene has 5 transcripts,all transcripts are shown below:

| Name      | Transcript ID                         | bp   | Protein               | Biotype         | CCDS                      | UniProt                | Flags                         |
|-----------|---------------------------------------|------|-----------------------|-----------------|---------------------------|------------------------|-------------------------------|
| Stat6-201 | <a href="#">ENSMUST00000092074.11</a> | 3775 | <a href="#">837aa</a> | Protein coding  | <a href="#">CCDS36082</a> | <a href="#">P52633</a> | TSL:1 GENCODE basic APPRIS P1 |
| Stat6-202 | <a href="#">ENSMUST00000120279.1</a>  | 609  | <a href="#">113aa</a> | Protein coding  | -                         | <a href="#">D3YU28</a> | CDS 3' incomplete TSL:2       |
| Stat6-205 | <a href="#">ENSMUST00000156231.1</a>  | 768  | No protein            | Retained intron | -                         | -                      | TSL:3                         |
| Stat6-204 | <a href="#">ENSMUST00000145470.1</a>  | 698  | No protein            | Retained intron | -                         | -                      | TSL:3                         |
| Stat6-203 | <a href="#">ENSMUST00000128072.1</a>  | 341  | No protein            | Retained intron | -                         | -                      | TSL:3                         |

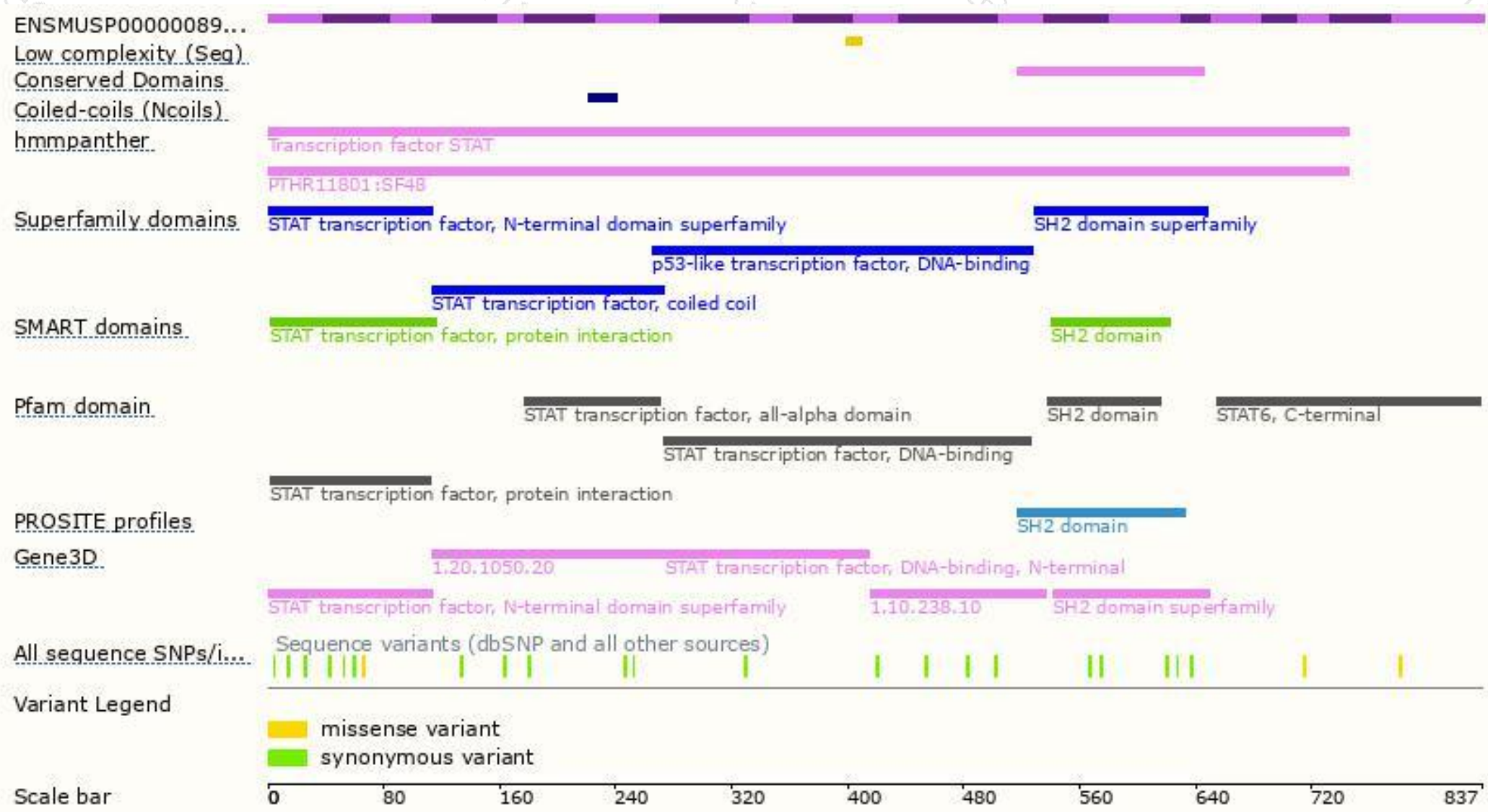
The strategy is based on the design of *Stat6-201* transcript,The transcription is shown below



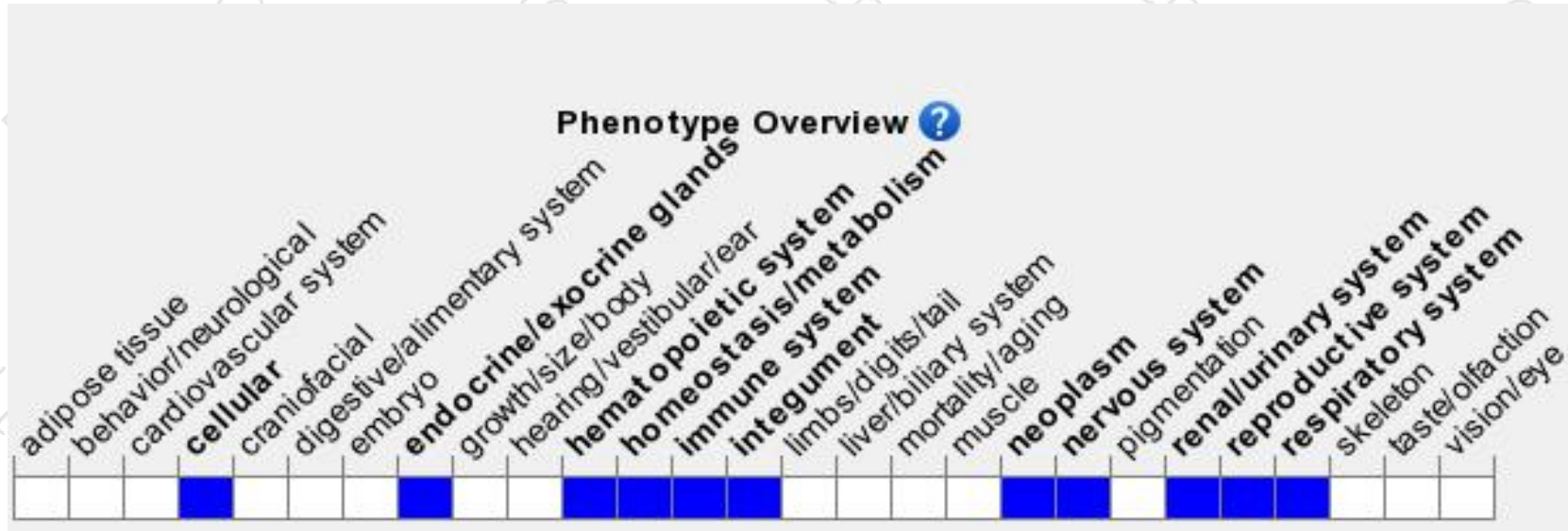
# Genomic location distribution



# 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, Homozygotes for targeted null mutations exhibit impaired IL4 responses, including anti-IgM stimulated B cell proliferation, class switching to IgE, contact sensitivity, and Th2 cytokine production, and show increased resistance to certain infections.

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

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