

# ***Psd Cas9-CKO Strategy***

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**Reviewer :**

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# Project Overview

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**Project Name**

*Psd*

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**Project type**

Cas9-CKO

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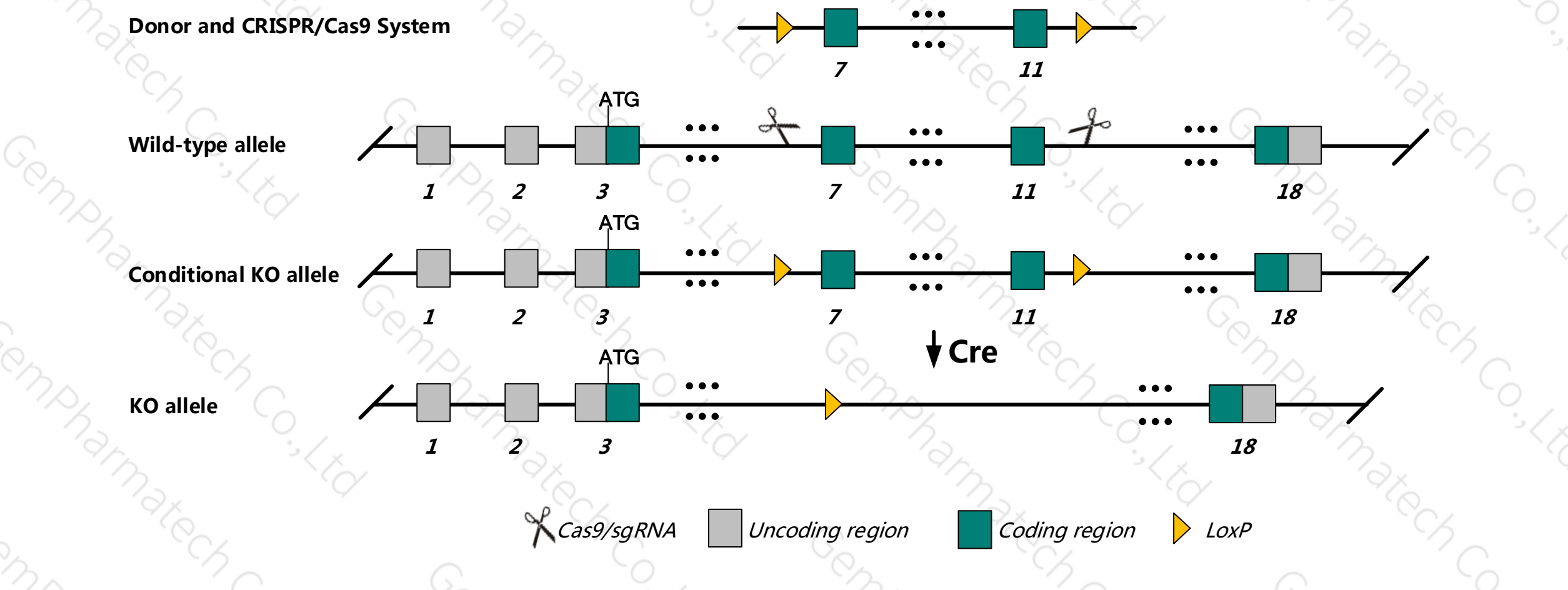
**Animal background**

C57BL/6JGpt

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# Conditional Knockout strategy

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



# Technical routes

- The *Psdl* gene has 14 transcripts, According to the structure of *Psdl* gene, exon7-exon11 of *Psdl-201* transcript is recommended as the knockout region. The region contains the 538bp coding sequence. Knock out the region, result in destruction of protein.
- This project uses CRISPR/Cas9 technology to modify *Psdl* gene. The brief process is as follows: sgRNA was transcribed in vitro, donor vector was constructed, Cas9, sgRNA and donor were microinjected into fertilized eggs of C57BL/6JGpt mice and homologous recombination was carried out to obtain F0 mice. A stable and hereditary F1 generation mouse model was obtained by mating F0 generation mice with C57BL/6JGpt mice which were confirmed positive by PCR-sequencing.
- The flox mice was knocked out after mating with mice expressing Cre recombinase, resulting in the loss of function of the target gene in specific tissues and cell types.

- The *Psd* gene is located in the Chr19. If the knockout mice are mixed with other mice, two target genes are avoided on the same chromosome as possible, otherwise the offspring of mice with double gene positive and homozygous gene knockout can not be obtained.
- This Strategy is designed based on genetic information in existing databases. Due to the complexity of gene transcription and translation processes, all risks cannot be predicted under existing information.

# Gene information ( NCBI )

## Psd pleckstrin and Sec7 domain containing [ *Mus musculus* (house mouse) ]

Gene ID: 73728, updated on 31-Jan-2019

### Summary

|                    |   |
|--------------------|---|
| Official Symbol    | Psd provided by <a href="#">MGI</a>   |
| Official Full Name | pleckstrin and Sec7 domain containing provided by <a href="#">MGI</a>   |
| Primary source     | <a href="#">MGI:MGI:1920978</a>   |
| See related        | <a href="#">Ensembl:ENSMUSG000000037126</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      | Efa6; Psdl; Efa6a; mKIAA2011; A930015K15; 1110007H17Rik   |
| Expression         | Broad expression in frontal lobe adult (RPKM 68.1), cortex adult (RPKM 65.1) and 16 other tissues <a href="#">See more</a>  |
| Orthologs          | <a href="#">human</a> <a href="#">all</a>   |

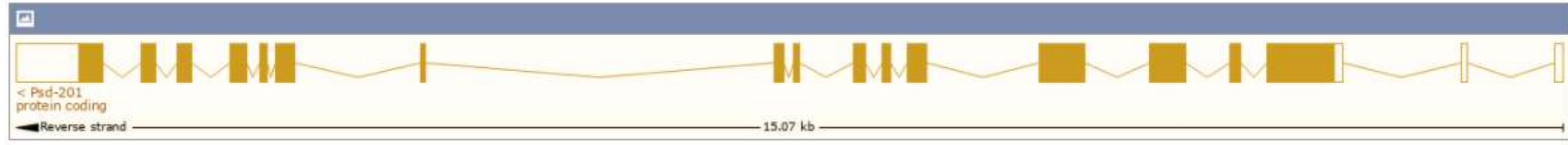


# Transcript information ( Ensembl )

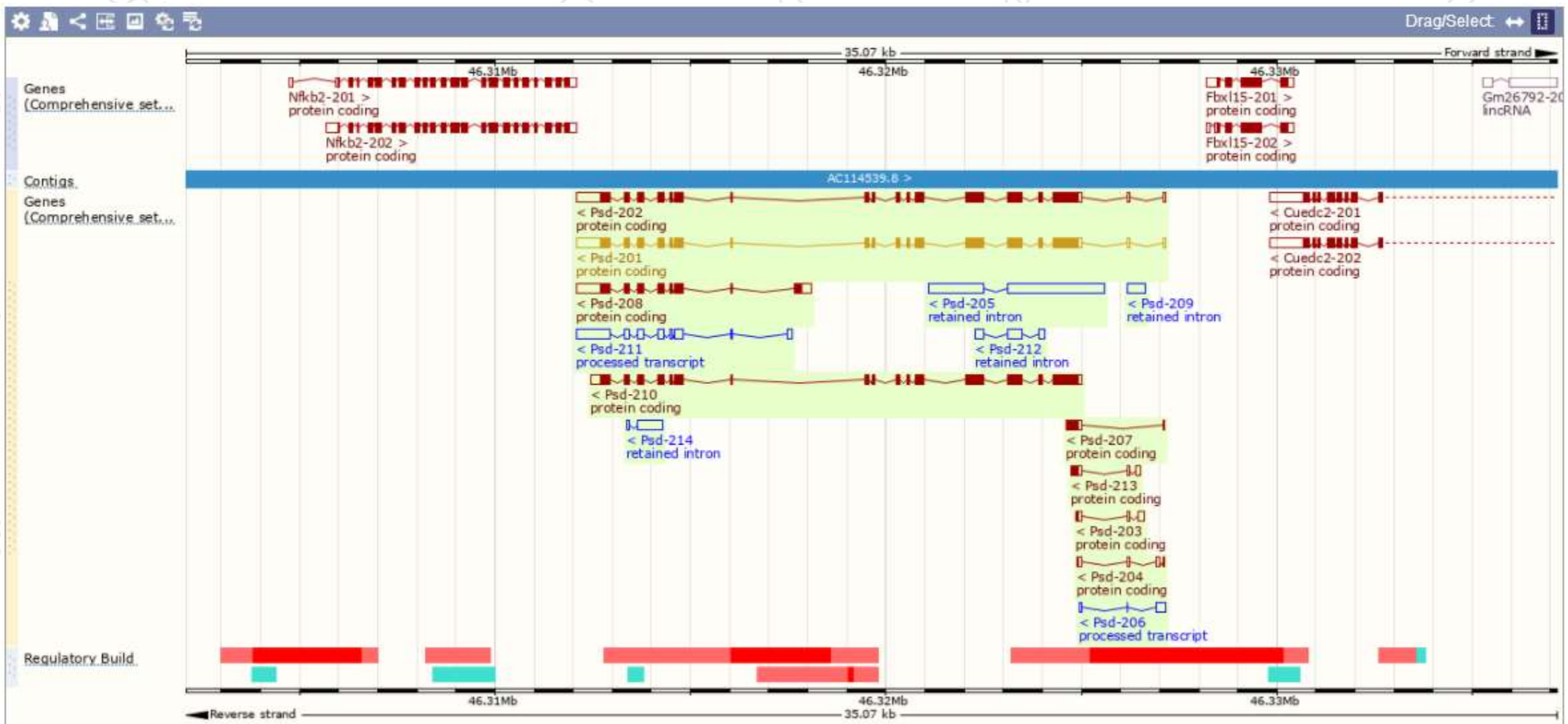
The gene has 14 transcripts, and all transcripts are shown below :

| Show/hide columns (1 hidden) |                                       |      |                        |                      |                           |                            |  | Filter |                   |             |
|------------------------------|---------------------------------------|------|------------------------|----------------------|---------------------------|----------------------------|--|--------|-------------------|-------------|
| Name                         | Transcript ID                         | bp   | Protein                | Biotype              | CCDS                      | UniProt                    | RefSeq   | Flags  |                   |             |
| Psd-202                      | <a href="#">ENSMUST00000096029.11</a> | 3903 | <a href="#">1025aa</a> | Protein coding       | <a href="#">CCDS84449</a> | <a href="#">Q5DTT2</a>     | <a href="#">NM_001347454</a><br><a href="#">NP_001334383</a> | TSL:5  | GENCODE basic     | APPRIS ALT2 |
| Psd-201                      | <a href="#">ENSMUST00000041391.4</a>  | 3900 | <a href="#">1024aa</a> | Protein coding       | <a href="#">CCDS29875</a> | <a href="#">Q5DTT2</a>     | <a href="#">NM_028627</a><br><a href="#">NP_082903</a>       | TSL:1  | GENCODE basic     | APPRIS P3   |
| Psd-210                      | <a href="#">ENSMUST00000225323.1</a>  | 3398 | <a href="#">1025aa</a> | Protein coding       | <a href="#">CCDS84449</a> | <a href="#">Q5DTT2</a>     | -  |        | GENCODE basic     | APPRIS ALT2 |
| Psd-208                      | <a href="#">ENSMUST00000224556.1</a>  | 2034 | <a href="#">393aa</a>  | Protein coding       | -                         | <a href="#">Q5DTT2</a>     | -  |        | GENCODE basic     |             |
| Psd-207                      | <a href="#">ENSMUST00000224447.1</a>  | 445  | <a href="#">105aa</a>  | Protein coding       | -                         | <a href="#">A0A286YDE5</a> | -  |        | CDS 3' incomplete |             |
| Psd-213                      | <a href="#">ENSMUST00000225781.1</a>  | 443  | <a href="#">65aa</a>   | Protein coding       | -                         | <a href="#">A0A286YCR6</a> | -  |        | CDS 3' incomplete |             |
| Psd-203                      | <a href="#">ENSMUST00000223903.1</a>  | 361  | <a href="#">25aa</a>   | Protein coding       | -                         | <a href="#">A0A286YDW2</a> | -  |        | CDS 3' incomplete |             |
| Psd-204                      | <a href="#">ENSMUST00000223917.1</a>  | 332  | <a href="#">14aa</a>   | Protein coding       | -                         | <a href="#">A0A286YDD4</a> | -  |        | CDS 3' incomplete |             |
| Psd-211                      | <a href="#">ENSMUST00000225748.1</a>  | 1705 | No protein             | Processed transcript | -                         | -                          | -  |        |                   |             |
| Psd-206                      | <a href="#">ENSMUST00000224444.1</a>  | 328  | No protein             | Processed transcript | -                         | -                          | -  |        |                   |             |
| Psd-205                      | <a href="#">ENSMUST00000224094.1</a>  | 3860 | No protein             | Retained intron      | -                         | -                          | -  |        |                   |             |
| Psd-214                      | <a href="#">ENSMUST00000226062.1</a>  | 735  | No protein             | Retained intron      | -                         | -                          | -  |        |                   |             |
| Psd-212                      | <a href="#">ENSMUST00000225770.1</a>  | 722  | No protein             | Retained intron      | -                         | -                          | -  |        |                   |             |
| Psd-209                      | <a href="#">ENSMUST00000225072.1</a>  | 437  | No protein             | Retained intron      | -                         | -                          | -  |        |                   |             |

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

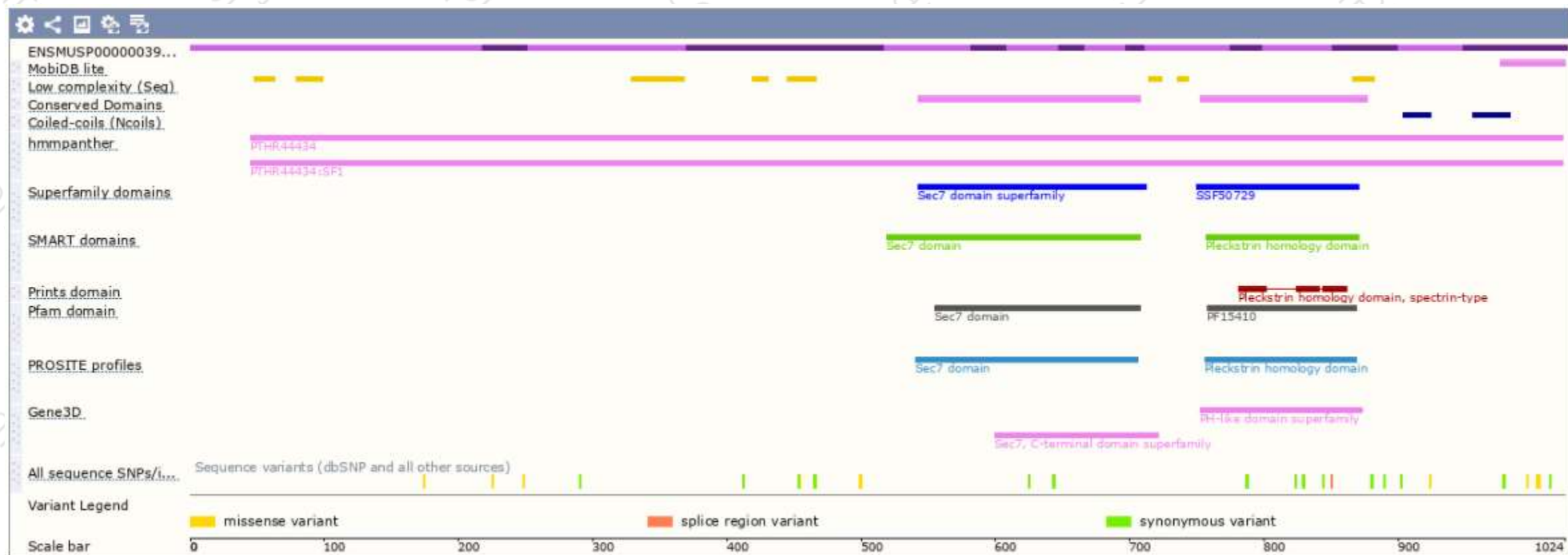


# Genomic location distribution





# Protein domain



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