

Tyk2 Cas9-CKO Strategy

Designer:

Daohua Xu

Project Overview



Project Name

Tyk2

Project type

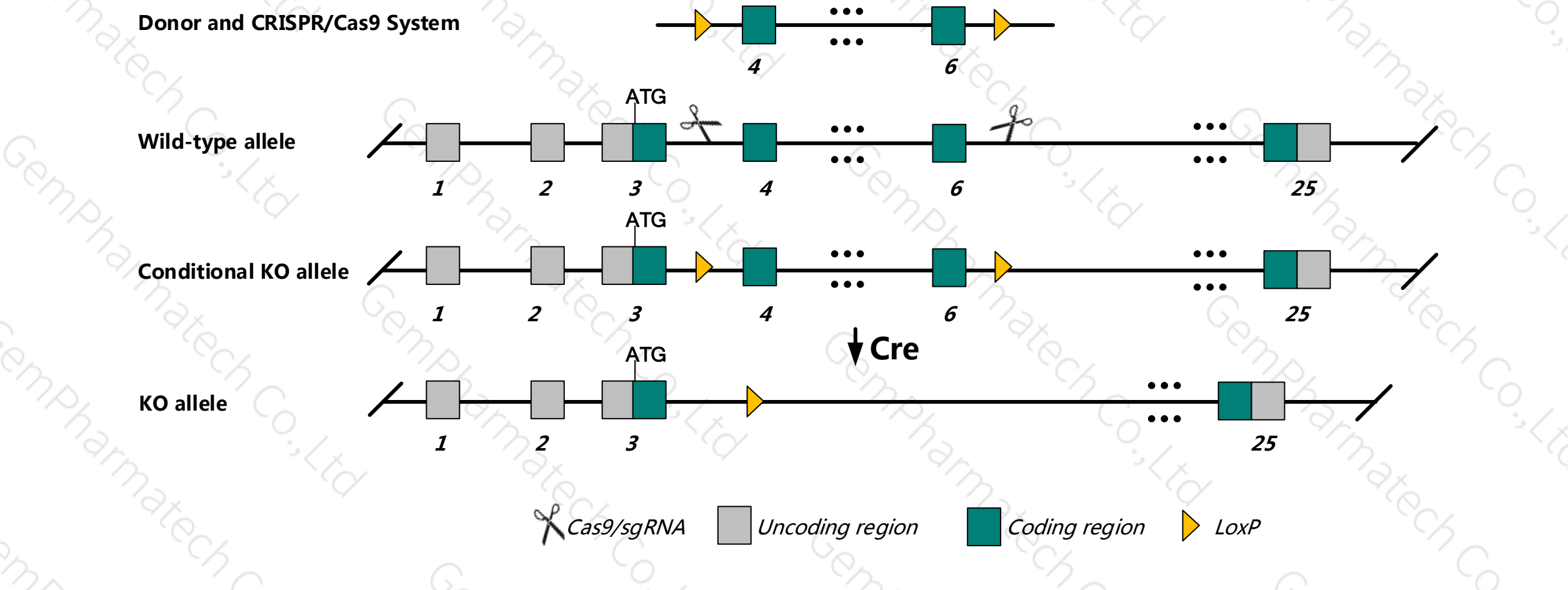
Cas9-CKO

Strain background

C57BL/6JGpt

Conditional Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Tyk2* gene. The schematic diagram is as follows:



- The *Tyk2* gene has 6 transcripts. According to the structure of *Tyk2* gene, exon4-exon6 of *Tyk2*-206 (ENSMUST00000216874.1) transcript is recommended as the knockout region. The region contains 499bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Tyk2* gene. The brief process is as follows: sgRNA was transcribed in vitro, donor vector was constructed. Cas9, sgRNA and Donor were microinjected into the fertilized eggs of C57BL/6JGpt mice. Fertilized eggs were transplanted to obtain positive F0 mice which were confirmed by PCR and sequencing. A stable F1 generation mouse model was obtained by mating positive F0 generation mice with C57BL/6JGpt mice.
- 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 or cell types.

- According to the existing MGI data , Homozygous mutant mice are viable and fertile, but differ from wild-type with respect to interleukin 12 mediated T cell function.
- The *Tyk2* gene is located on the Chr9. 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 loxp insertion on gene transcription, RNA splicing and protein translation cannot be predicted at the existing technology level.

Gene information (NCBI)

Tyk2 tyrosine kinase 2 [*Mus musculus* (house mouse)]

Gene ID: 54721, updated on 9-Sep-2018

Summary

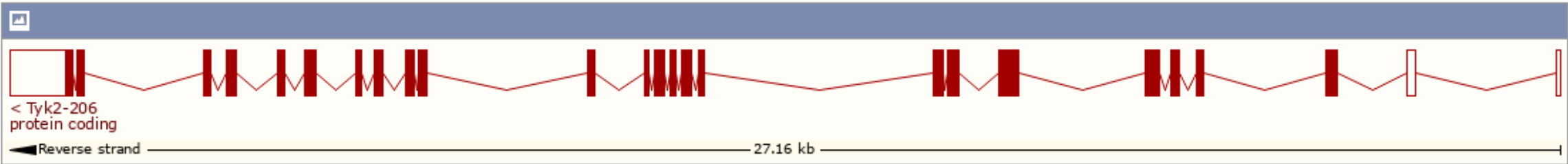
Official Symbol	Tyk2 provided by MGI
Official Full Name	tyrosine kinase 2 provided by MGI
Primary source	MGI:MGI:1929470
See related	Ensembl:ENSMUSG00000032175 Vega:OTTMUSG00000063155
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	JTK1
Expression	Ubiquitous expression in spleen adult (RPKM 21.7), mammary gland adult (RPKM 15.9) and 28 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

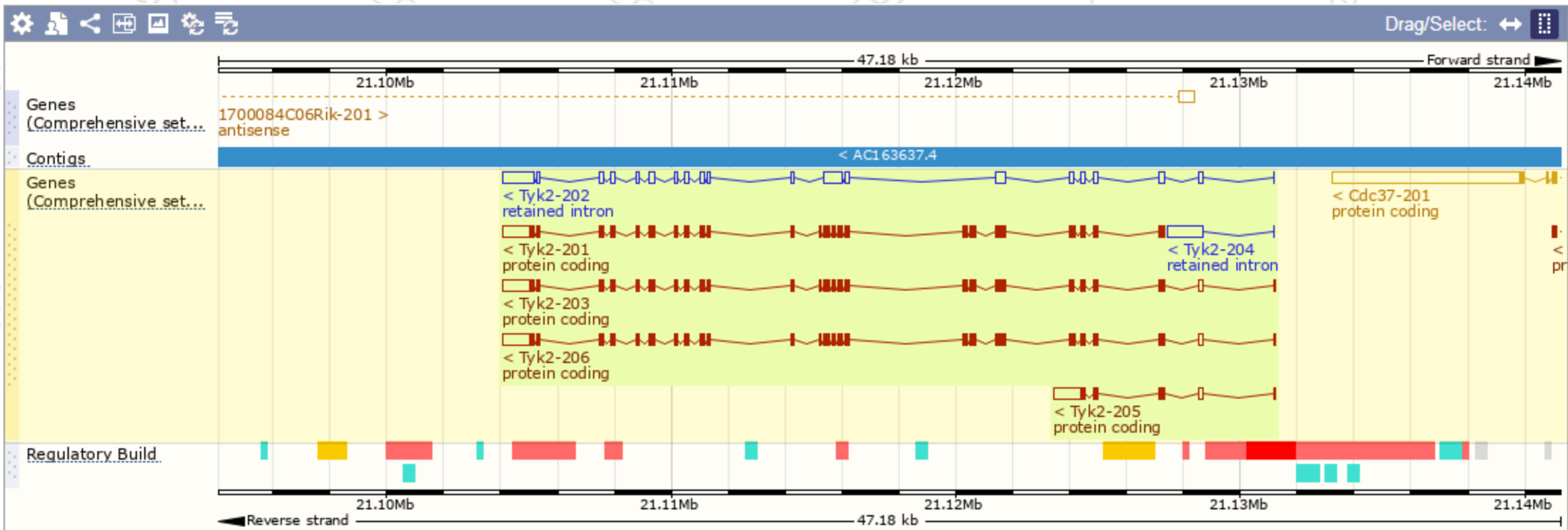
The gene has 6 transcripts, and all transcripts are shown below:

Show/hide columns (1 hidden)								Filter	
Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	RefSeq	Flags	
Tyk2-206	ENSMUST00000216874.1	4828	1207aa	Protein coding	CCDS57656	E9QJS1	NM_001205312 NP_001192241	TSL:1	GENCODE basic APPRIS P2
Tyk2-201	ENSMUST00000001036.10	4619	1207aa	Protein coding	CCDS57656	E9QJS1	-	TSL:5	GENCODE basic APPRIS P2
Tyk2-203	ENSMUST00000214454.1	4770	1184aa	Protein coding	-	Q9R117	NM_018793 NP_061263	TSL:1	GENCODE basic APPRIS ALT2
Tyk2-205	ENSMUST00000214864.1	1662	159aa	Protein coding	-	A0A1L1SVI6	-	TSL:1	GENCODE basic
Tyk2-202	ENSMUST00000213717.1	4444	No protein	Retained intron	-	-	-	TSL:5	
Tyk2-204	ENSMUST00000214615.1	1289	No protein	Retained intron	-	-	-	TSL:1	

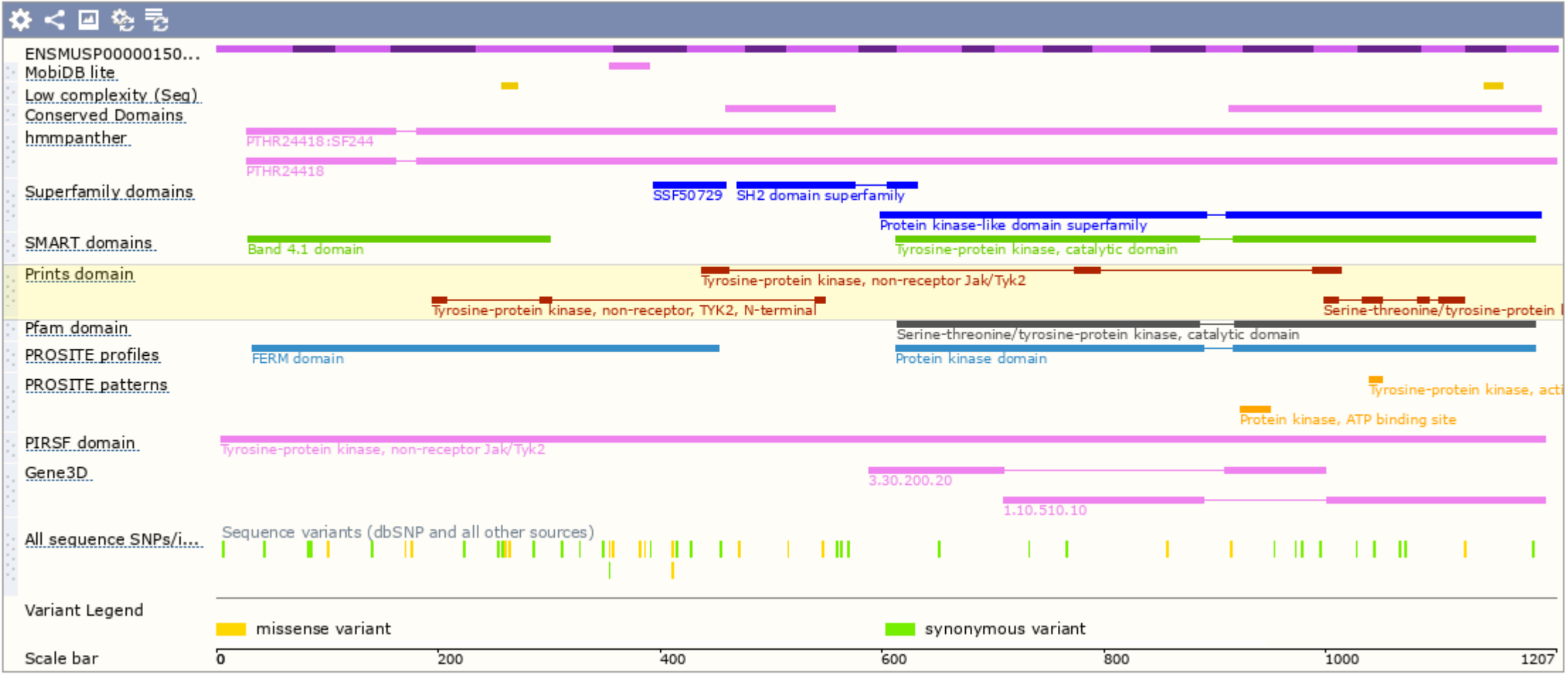
The strategy is based on the design of *Tyk2-206* transcript, The transcription is shown below



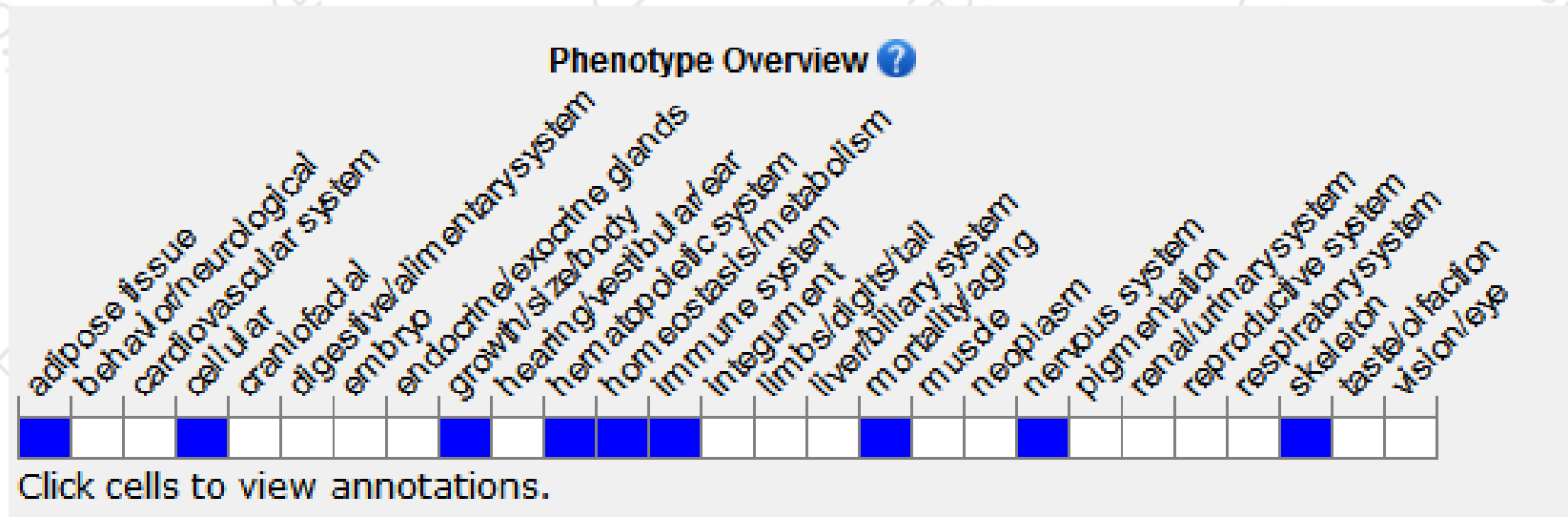
Genomic location distribution



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 mutant mice are viable and fertile, but differ from wild-type with respect to interleukin 12 mediated T cell function.

If you have any questions, you are welcome to inquire.
Tel: 025-5864 1534



集萃药康生物科技
GemPharmatech Co.,Ltd

