

Jak2 Cas9-KO Strategy

Designer:

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Project Overview

Project Name

Jak2

Project type

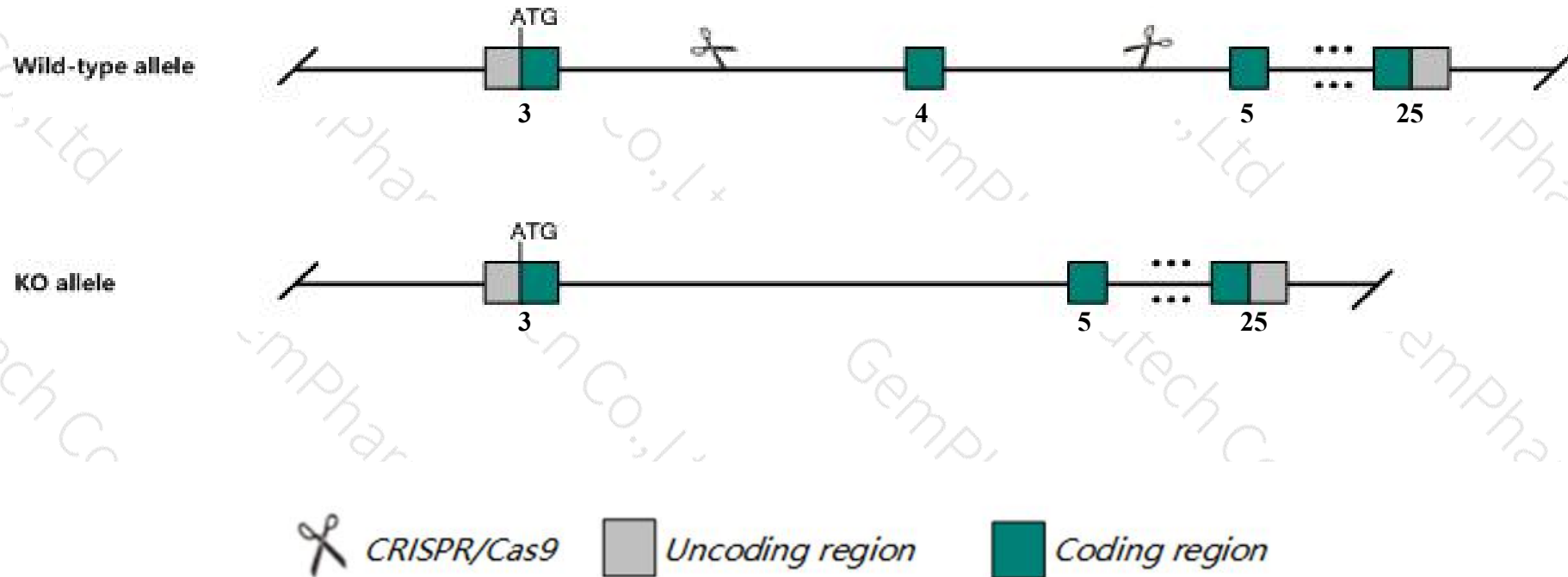
Cas9-KO

Strain background

C57BL/6JGpt

Knockout strategy

This model will use CRISPR/Cas9 technology to edit the *Jak2* gene. The schematic diagram is as follows:



- The *Jak2* gene has 4 transcripts. According to the structure of *Jak2* gene, exon4 of *Jak2-202* (ENSMUST00000065796.9) transcript is recommended as the knockout region. The region contains 124bp coding sequence. Knock out the region will result in disruption of protein function.
- In this project we use CRISPR/Cas9 technology to modify *Jak2* gene. The brief process is as follows: CRISPR/Cas9 system v

- According to the existing MGI data, Homozygotes for null mutations die during midgestation due to a failure of erythropoieses. Mice expressing a conditional allele activated in mammary tissue exhibit lactation deficiency due to impaired alveologenesis. Mice homozygous for a knock-in allele exhibit myeloproliferative neoplasm.
- The *Jak2* gene is located on the Chr19. 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)

Jak2 Janus kinase 2 [Mus musculus (house mouse)]

Gene ID: 16452, updated on 7-Apr-2019

Summary



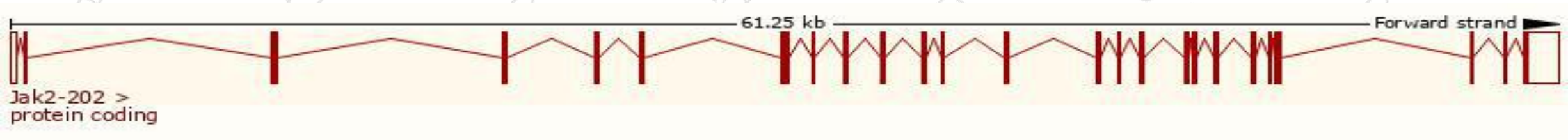
Official Symbol	Jak2 provided by MGI
Official Full Name	Janus kinase 2 provided by MGI
Primary source	MGI:MGI:96629
See related	Ensembl:ENSMUSG00000024789
Gene type	protein coding
RefSeq status	VALIDATED
Organism	Mus musculus
Lineage	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi; Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Myomorpha; Muroidea; Muridae; Murinae; Mus; Mus
Also known as	Fd17
Expression	Ubiquitous expression in bladder adult (RPKM 6.6), CNS E18 (RPKM 6.3) and 28 other tissues See more
Orthologs	human all

Transcript information (Ensembl)

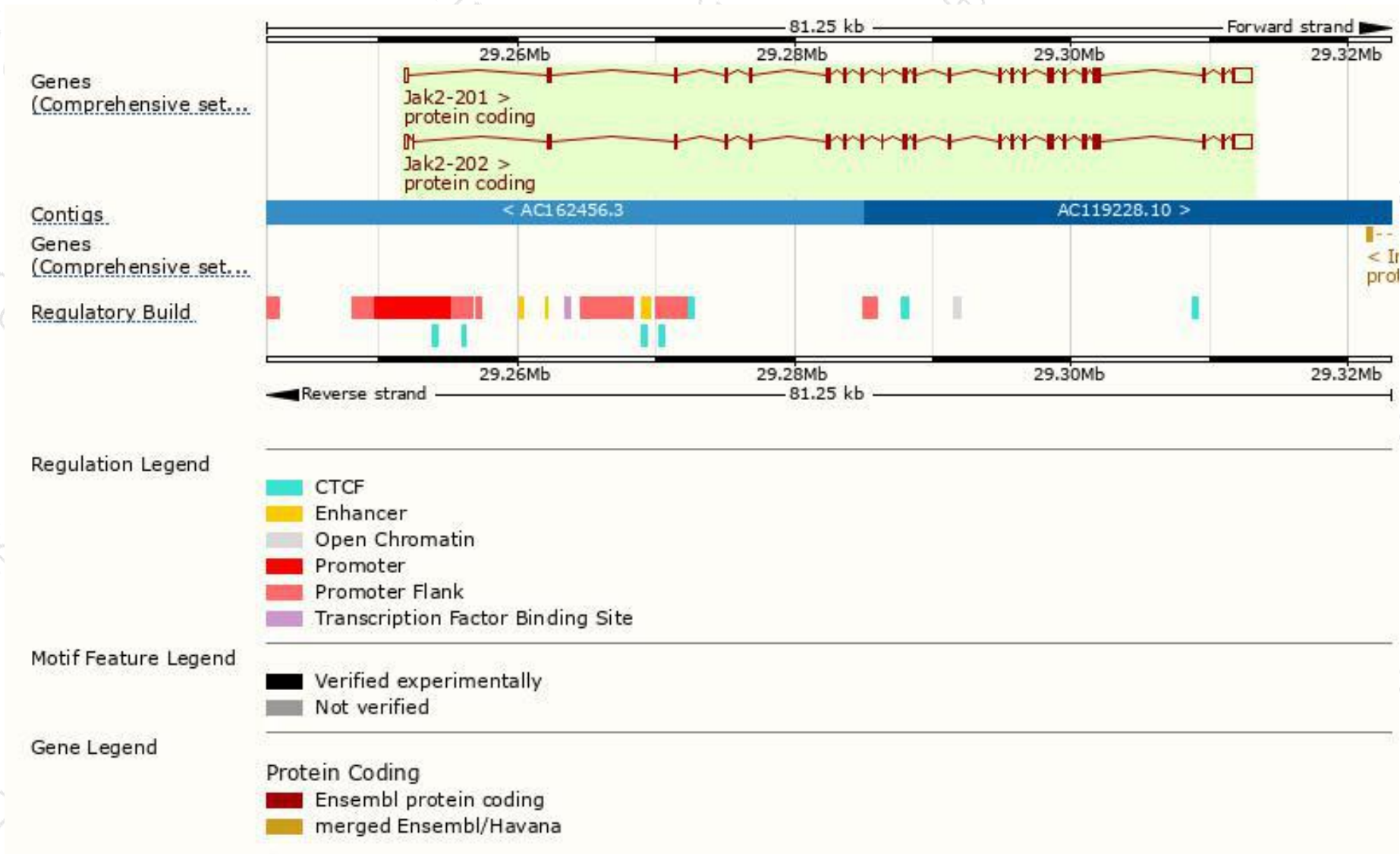
The gene has 4 transcripts,all transcripts are shown below:

Name	Transcript ID	bp	Protein	Biotype	CCDS	UniProt	Flags
Jak2-202	ENSMUST00000065796.9	5030	1132aa	Protein coding	CCDS37950	G5E852	TSL:5 GENCODE basic APPRIS P1
Jak2-201	ENSMUST00000025705.6	4947	1132aa	Protein coding	CCDS37950	G5E852	TSL:5 GENCODE basic APPRIS P1
Jak2-204	ENSMUST00000238009.1	3995	1132aa	Protein coding	CCDS37950	-	GENCODE basic APPRIS P1
Jak2-203	ENSMUST00000236990.1	2219	638aa	Protein coding	-	-	CDS 3' incomplete

The strategy is based on the design of *Jak2-202* transcript,The transcription is shown below



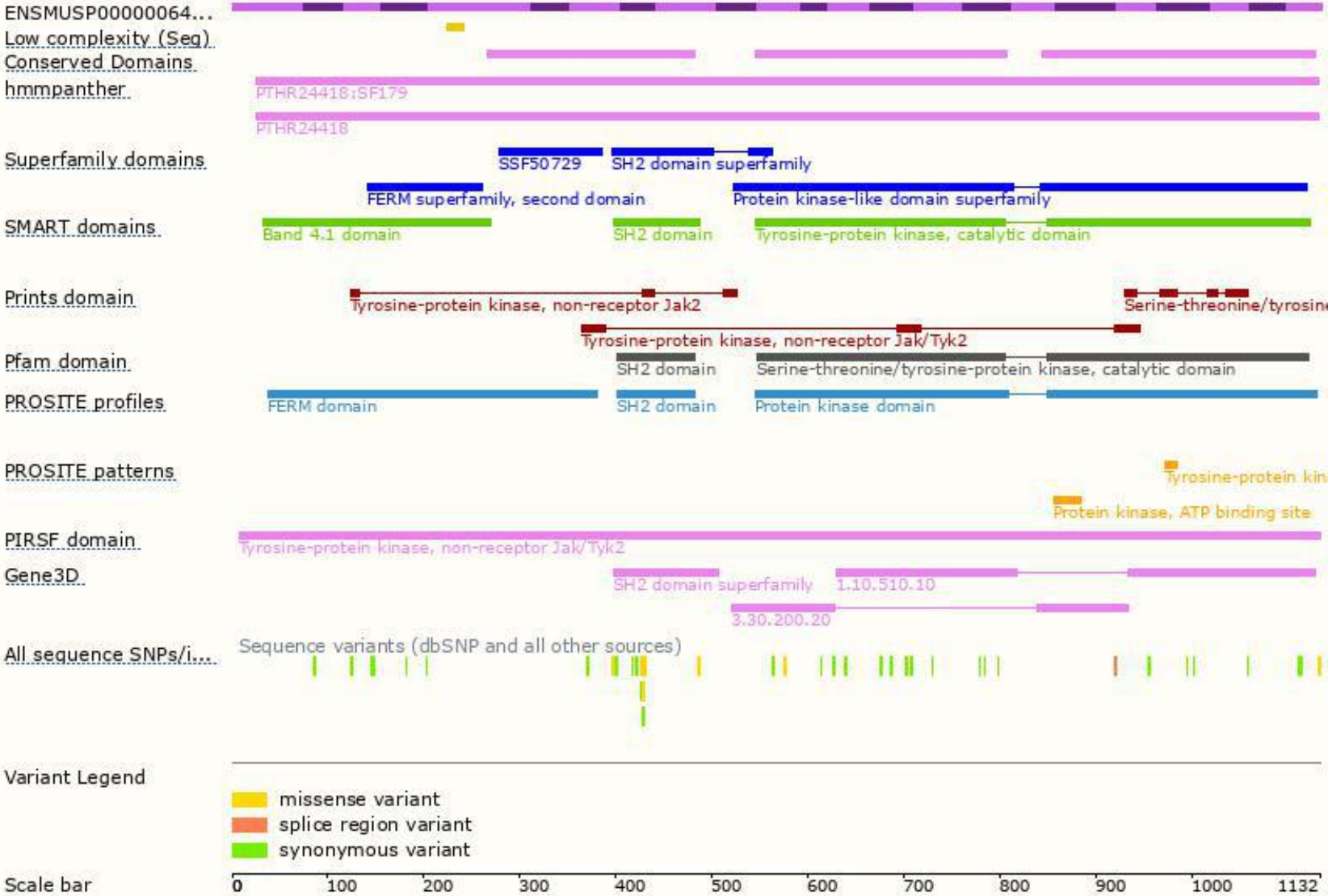
Genomic location distribution



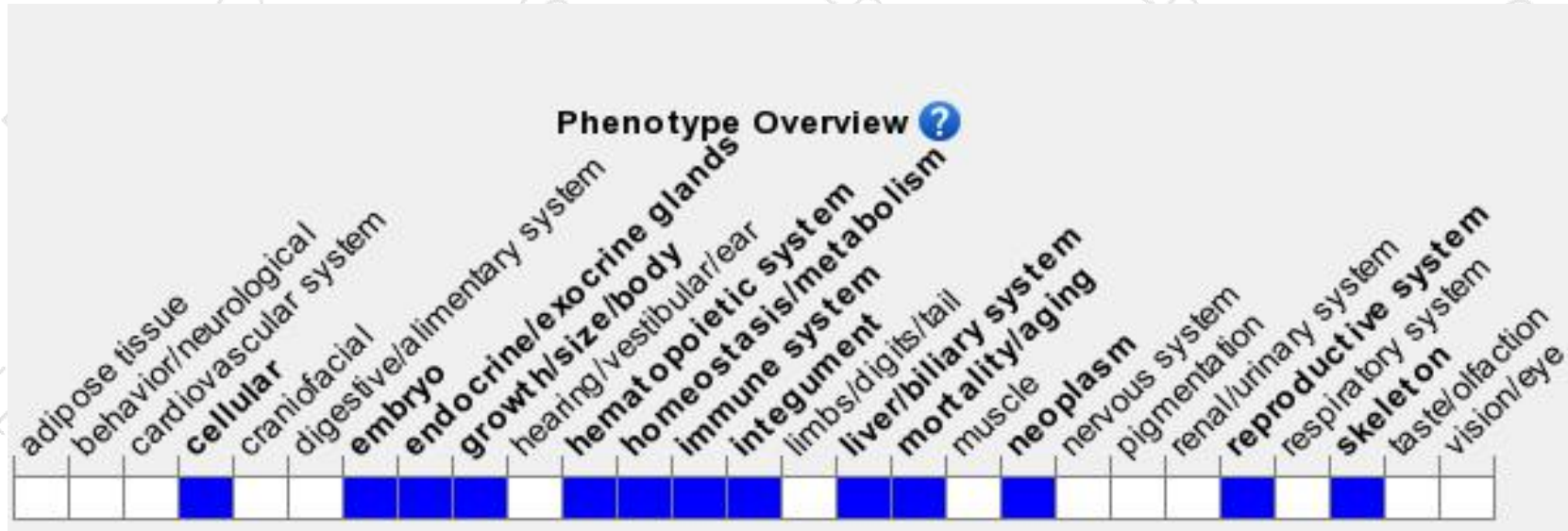
Protein domain



集萃药康
GemPharmatech



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 null mutations die during midgestation due to a failure of erythropoieses. Mice expressing a conditional allele activated in mammary tissue exhibit lactation deficiency due to impaired alveologenesis. Mice homozygous for a knock-in allele exhibit myeloproliferative neoplasm.

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

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