



B 6 N . 1 2 9 S 6 $\text{J}^{\text{tm}2.2\text{Ee}}$ - A m l y J

Stock No: 031658 | Jak2^{VF}

Congenic, Targeted Mutation



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P R E - O R D E R N O W

Estimated to begin distribution on Jan 27, 2020

Overview

Also Known As: Jak2^{VF}

$\text{Jak2}^{+\text{VF}}$ mice have an inverted exon 14, carrying a valine to phenylalanine mutation (V617F), downstream of the endogenous exon 14 of the Janus kinase 2 (*Jak2*) gene. Both exons are surrounded by *loxP* and *loxP511* sites, allowing for Cre-mediated removal of the endogenous exon 14 and inversion of the mutated exon 14. These mice may be useful when studying myeloproliferative neoplasm (MPN).

Donating Investigator

Ann Mullally, Brigham and Women's Hospital--Harvard Medical School

READ MORE +

GENETIC OVERVIEW

Genetic Background

Generation

N10+pN1
(2019-03-15 00:00:00)

Jak2^{tm1.2Ble}

Allele Type

Gene Symbol

Gene Name

Targeted (Conditional ready
(e.g. floxed))

Jak2

Janus kinase 2

VIEW GENETICS

RESEARCH APPLICATIONS

Immunology, Inflammation and Autoimmunity Research

Cell Biology Research

Research Tools

VIEW ALL RESEARCH APPLICATIONS

BASE PRICE

Starting at:

\$255.00 Domestic price for female

333.51 Domestic price for breeder pair

VIEW PRICE LIST

Details

Detailed Description

Jak2^{+VF} mice have an inverted exon 14, carrying a valine to phenylalanine mutation (V617F), downstream of the endogenous exon 14 of the Janus kinase 2 (*Jak2*) gene. Both exons are surrounded by *loxP* and *loxP511* sites, allowing for Cre-mediated removal of the endogenous exon 14 and inversion of the mutated exon 14. The V617F mutation is commonly found in patients with myeloproliferative neoplasm (MPN) and is present in approximately 95% of patients with polycythemia vera (PV) and in approximately 50% of patients with essential thrombocythemia (ET) and primary myelofibrosis (PMF).

JAK2 is a protein tyrosine kinase involved in a specific subset of cytokine receptor signaling pathways and is misregulated or

mutated in some myeloproliferative diseases and cancers. The V617F mutation results in constitutive activation of JAK2 kinase signaling. When activated, JAK2 phosphorylates STAT transcription factors and initiates the JAK-STAT signaling pathway. This is the most prevalent JAK2 mutation.

Mice that are heterozygous for this allele are viable and fertile, while floxed homozygous mice are not viable. Lethality may be the result of the targeting construct creating a null allele prior to *cre* excision. When bred to mice that express tissue-specific Cre recombinase, resulting offspring will have the floxed endogenous exon 14 removed and the V617F mutant exon 14 placed into transcriptional orientation.

When mice are bred to a germline or a hematopoietic-specific Cre Recombinase expressing strain such as B6.FVB-Tg(Ella-cre)C5379Lmgd/J (Stock No. [003724](#)), B6.Cg-Tg(Mx1-cre)1Cgn/J (Stock No. [003556](#)), or VavCre, mice are a model of MPN characterized by elevated hematocrit (HCT), splenomegaly, and prominent splenic extramedullary erythropoiesis. Mice have median survival time of 146 days. They develop lethal 100% penetrant myeloproliferative neoplasms but not acute leukemia. The bone marrow myeloid progenitor compartment is skewed toward the erythroid lineage, which cannot transfer disease. The long-term HSC compartment (CD150+ CD48+ LSK) can transplant the disease into lethally irradiated wild-type recipient mice. When mice are treated with Interferon- α , Jak2^{VF} MPN-propagating cells are depleted, and the disease cannot be transferred.

Of note crossing primary floxed mice to MxCre results in spontaneous recombination in the absence of plpC.

+ Development

+ Control Suggestions

+ Selected References

- Genetics

+ *Jak2^{tm1.2Blc}*

- Disease/Phenotype

+ Disease Terms

+ Research Areas By Genotype

+ Mammalian Phenotype Terms by Genotype

+ References

- Technical Support

C H A T O  F L I N E

C O N T A C T T E C H N I C A L S U P P O R T

Genotyping Protocols

Separated PCR: [Jak2^{tm1.2Ble}](#)

Sanger sequencing: [Jak2^{V617F}](#) [SEQ](#)

[Genotyping resources and troubleshooting](#)

Dietary Information

LabDiet® 5K54 formulation (4% fat)

Breeding Considerations

When maintaining a live colony, heterozygous mice may be bred to wild-type (noncarrier) mice from the colony or to C57BL/6NJ inbred mice (Stock No. [005304](#)). The donating investigator reports that homozygous mice are not viable.

[Additional Breeding and Husbandry Support](#)

Mating System

Wild-type x Heterozygote

Heterozygote x Wild-type

Citation

When using the [Jak2^{VF}](#) mouse strain in a publication, please [cite the originating article\(s\)](#) and include JAX stock #031658 in your

Animal Health Reports

[Materials and Methods section](#)

[Facility Barrier Level Descriptions](#)

 [AX18 \(Maximum\)](#)

➔ Pricing & Availability



Estimated to begin distribution on Jan 27, 2020

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Pre-order

Domestic **International**

Pricing effective for USA, Canada and Mexico shipping destinations

Live Mouse

| AGE | SEX | GENOTYPE | PRICE |
|------------------|--------|--|----------|
| Approx 4-8 weeks | Female | Heterozygous for Jak2^{tm1.2Ble} | \$255.00 |
| | Male | Heterozygous for Jak2^{tm1.2Ble} | \$255.00 |
| Approx 4-8 weeks | Female | Wild-type for Jak2^{tm1.2Ble} | \$78.51 |
| | Male | Wild-type for Jak2^{tm1.2Ble} | \$78.51 |

Breeder Pair

| SEX | GENOTYPE | PRICE |
|--------|--|----------|
| Female | Heterozygous for Jak2^{tm1.2Ble} | \$333.51 |
| Male | Wild-type for Jak2^{tm1.2Ble} | |
| Female | Wild-type for Jak2^{tm1.2Ble} | \$333.51 |
| Male | Heterozygous for Jak2^{tm1.2Ble} | |

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