

GENETICALLY
ENGINEERED
MODELS
(GEM)



MICE
Mutant inbred

NATURAL
IMMUNO-
DEFICIENT

B6 hPD-1 Mouse

WILD TYPE

Strain name:

C57BL/6Smoc-*Pdcd1*^{em1(PDCD1)}/SmocRj

Type: Mutant inbred mouse, GMO

Origin: Shanghai Model Organism Center

NATURAL
MUTANTS

Colour and related genotype:

Black mouse



Presentation of the model

The B6 hPD-1 mouse model is a genetically engineered knock-in strain in which the murine *Pdcd1* gene has been replaced by its human counterpart, PD-1 (Programmed Cell Death Protein 1). PD-1 is a crucial immune checkpoint receptor expressed on activated T cells and other immune cells. It plays a vital role in regulating immune responses by binding to its ligands, PD-L1 and PD-L2, on antigen-presenting cells or tumor cells, suppressing T-cell activation to maintain immune homeostasis and prevent overactivation.

This strain is a valuable tool for studying the regulation of immune responses and exploring mechanisms of immune tolerance. It enables the preclinical evaluation of human-specific monoclonal antibodies or other therapeutic agents targeting PD-1, particularly in immuno-oncology. Researchers can also investigate combination therapies involving PD-1 blockade, such as its use alongside CTLA-4 inhibitors or cancer vaccines. Additionally, this model is relevant for autoimmune disease and transplant rejection studies, where modulating PD-1 signaling is of therapeutic interest.

The B6 hPD-1 model serves as a critical bridge between murine research and clinical applications, providing insights into the safety, efficacy, and mechanisms of novel immunotherapies targeting PD-1.

This strain was developed by the Shanghai Model Organism Center and licensed to Janvier Labs in 2024. The animals are bred to preserve the genetic background and homozygous mutation of interest, following JANVIER LABS GENETIC POLICY®.



Main application and research fields

ONCOLOGY

IMMUNOLOGY AND IMMUNOTHERAPY

TRANSPLANTATION

AUTO-IMMUNE DISEASES



Our added value

- The «JANVIER LABS Genetic Policy», specific programme, guarantees homozygosity of autosomal pairs
- Animals with the SPF or SOPF standards
- A gentling policy for docile and easy-to-handle animals
- Optimal stability conditions of our models during shipments, thanks to our dedicated and internal transport service
- A scientific support with a team of Veterinarians and PhD



Validation data:

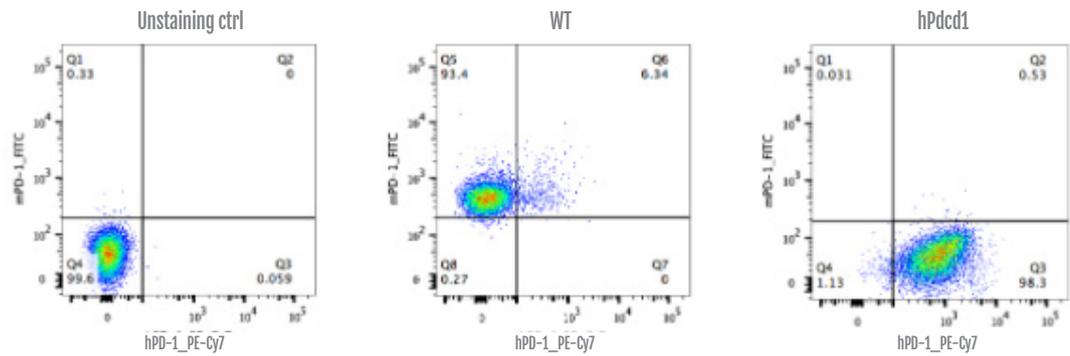


Figure 1. Expression of PD-1 in the activated spleen lymphocytes of humanized PD-1 homozygous mice.

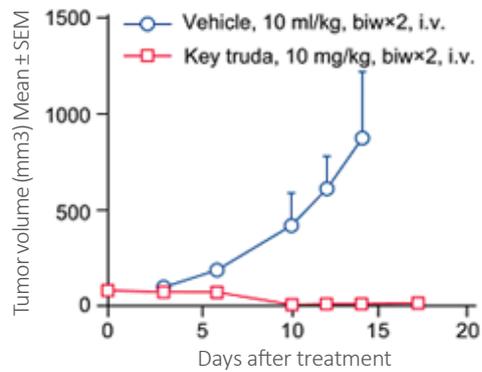


Figure 2. Anti-Tumor Activity of Anti-Human PD-1 Antibody in Humanized PD-1 Mice

Treatment with anti-human PD-1 antibodies significantly reduced MC38 tumor growth in humanized PD-1 mice, confirming their suitability for testing human PD-1-targeting drugs. Mean volume \pm SEM of tumor tissues.

