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Research Models and Services
Oncology – GEMS Mice

B-NDG B2m Double Knockout Plus Mice (B2m)

MODEL	NOMENCLATURE	HAIR	T CELLS	B CELLS	NK CELLS
B-NDG B2m	NOD.CB17-*Prkdc*^{scid}*Il2rg*^{tm1}*B2m*^{tm1}*Fcgrt*$^{tm1(B2m)}$/BcgenHsd	Yes	No	No	No

MODEL CHARACTERISTICS

The B-NDG B2m model is a double knockout mouse with an ultra-immunodeficient phenotype. The model was generated by Biocytogen by deleting the *IL2rg* gene from NOD-*scid* mice. *Prkdc* (protein kinase DNA-activated catalytic) null *scid* mutation is characterized by significantly deficient of functional T cells and B cells.

The common gamma chain gene (*IL2RG*) deletion results in a lack of functional receptors for IL-2, IL-4, IL-7, IL-9, IL-15, and IL-21, which results in the lack of functional NK cells.

The *B2m* gene is fused in the *FcRn* gene while the endogenous murine *B2m* gene is knocked out. This mouse combines the B-NDG mouse background with the absence of the MHC class I molecule β2m and shows no difference in the metabolism of IgG drugs in mice compared with wild-type mice. This model is effective against GvHD effects.

Envigo licensed the mouse model from Biocytogen in 2019, where the model had been maintained. Envigo was acquired by Inotiv in 2021. The model is albino.

RESEARCH USES

- Oncology research
- Immunology
- Humanization applications
- Graft vs. host disease research
- Drug efficacy evaluation

FEATURES AND ADVANTAGES

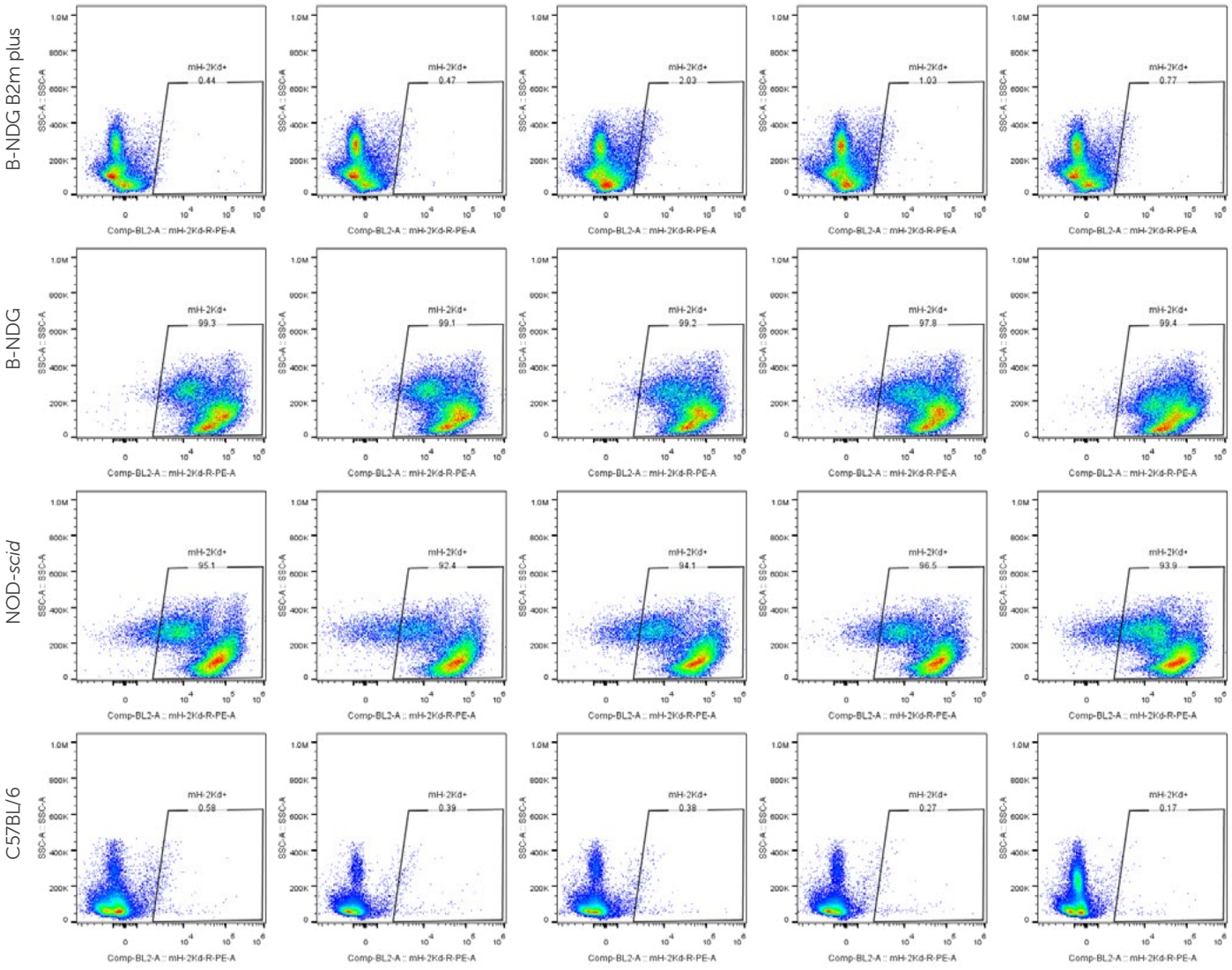
B2m plus mice have several special features that translate into unique benefits as compared to other immunodeficient models.

FEATURES	ADVANTAGES
Severe Immunodeficiency • Deficient in T cells • Deficient in B cells • Lacks NK cells • MHC class I deficiency	• Ultra-immunodeficient phenotype enhances tumor cell acceptance
Increased survival and decreased GvHD	• Significant extension of survival & marked delay of onset and reduction of severity of GvHD in human PBMC engrafted B2M/FcRn mice
Antibody half-life	• Improved antibody half-life compared with B2m KO mice

FLOW CYTOMETRIC ANALYSIS OF MHC CLASS I EXPRESSION

Blood cells were collected from B-NDG B2m KO plus, B-NDG, NOD-*scid*, and C57BL/6 mice (n=5) and analyzed by flow cytometry with MHC class I (H-2 Kd antibody). MHC class I were exclusively detectable in B-NDG, NOD-*scid* mice, but not in B-NDG B2m KO plus. Note that MHC class I in C57BL/6 cannot be detected with H-2Kd antibody. Specific flow results are shown in the images below.

Figure 1: H-2 Kd antibody flow results.



Schedule a meeting with one of our experts to find out more.