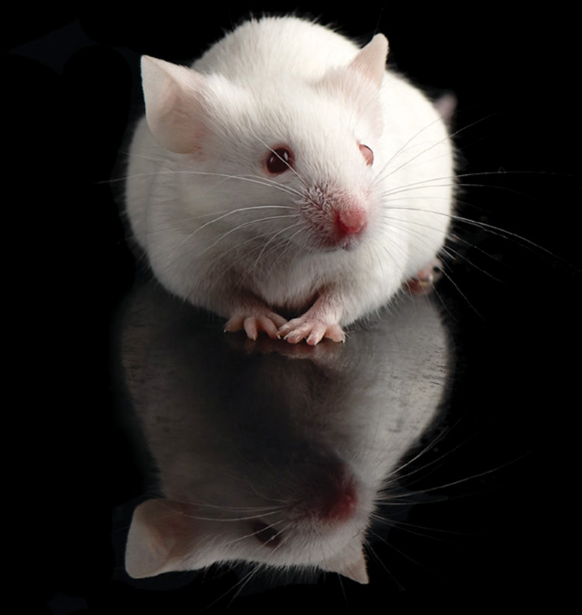
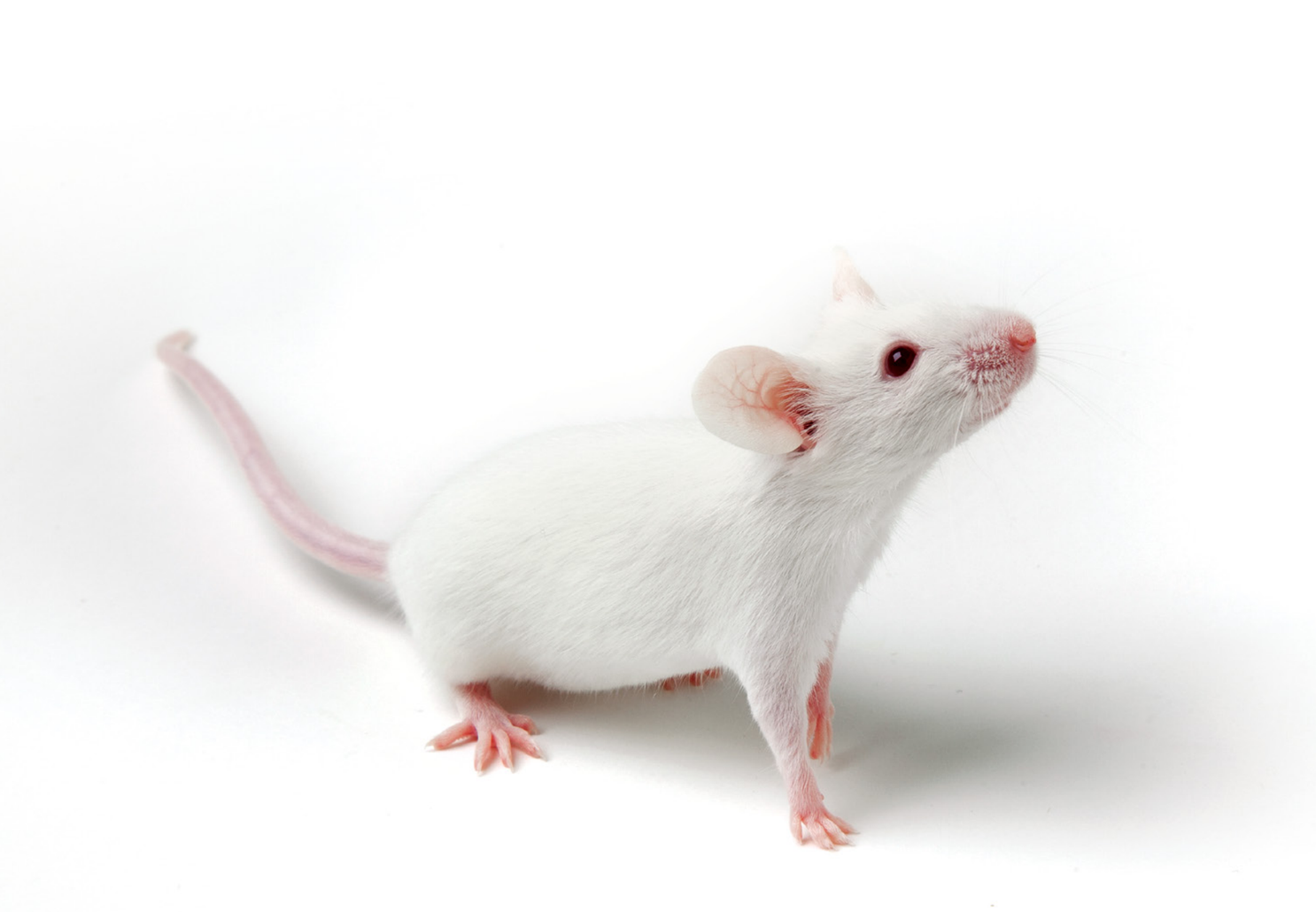
charles river



# The NCG Mouse



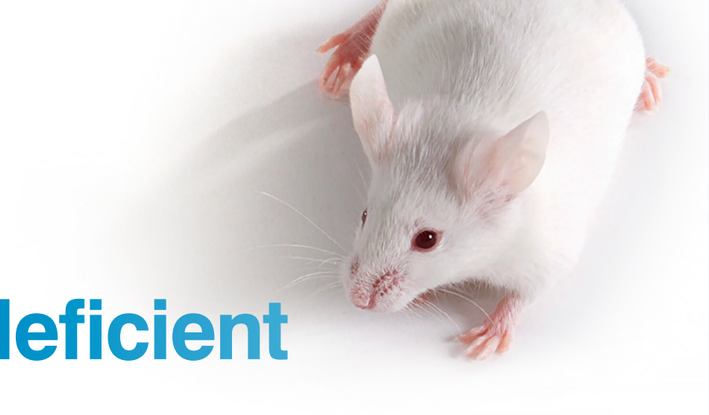
## The NCG Mouse

# Capabilities and Applications

The **NCG triple-immunodeficient mouse model** is the foundation of our humanization portfolio. It can host xenograft cells, tissue, and human immune system components due to its unique phenotype and noticeable improvements of foreign tissue transplantation and engraftment compared to previous generations.

As drug development for cancer and immunological diseases continue, there is a growing demand for specialized mouse models with human immune systems. Take a look at our **Charles River Hu-Mouse™** portfolio (HuPBMC-NCG and HuCD34-NCG) to see if they're a fit for your research, or create your own humanized mouse model using our **NCG/PBMC Select Humanization Kit** to customize your research design.

**+ Learn more**



## The NCG Mouse

# Triple-Immunodeficient

The NCG mouse was co-developed by Nanjing Biomedical Research Institute of Nanjing University and Nanjing Galaxy Biopharma in 2014, and transferred to Charles River in 2016. This model was created by simultaneous CRISPR/Cas9 editing of the *Prkdc* and *Il2rg* loci in the NOD/Nju mouse, generating a mouse coisogenic to the NOD/Nju.

The NCG is similar to other triple-immunodeficient models because it's capable of hosting xenograft cells, tissue, and human immune system components. As a result, it can be used for applications requiring significantly impaired immune function, including engraftment of primary tumors from human patients.

### Areas of Research

- Oncology
- Immunology
- Infectious disease
- GvHD (graft-versus-host disease)
- Diabetes
- Regenerative medicine
- Human organ transplantation

### Considerations

- Only available in North America.
- Animals should be housed and cared for according to immunodeficient mouse protocols (i.e., isolator housing, which includes all feed, bedding, caging, water bottles, etc., should be autoclaved or irradiated before being introduced into the room/isolator).

## Associated Services

### Cell Line Testing

- Ensures cells are "clean" (free of infectious agents like MuCPV, mycoplasma, etc.) before being grafted into humanized mice and/or to ensure there's no cell line contamination (other species or line of cell culture(s), like CHO, HeLa, etc. that got into the line) before being grafted into the humanized mice.
- Research biologics of rodent or human origin are often introduced into research animals as part of an investigative procedure. Precautionary screening should be performed to confirm that biologics are free of infectious agents and originate from the appropriate host species.

### Immunodeficient Health Monitoring

- Ensures animals are clean of unexpected infections post-grafting and remain so during and through the end of the study.

### Animal Identification

- Our Pre-ID™ services allow you to receive animal models that have been identified with codes provided by you. This facilitates the proper tracking and management of data for each study animal. The ability, or lack thereof, to efficiently and accurately identify these animals directly impacts your research.

Study-Ready

# PBMC Humanized Mouse Model

*In vivo* models engrafted with human immune cells are critical for immuno-oncology, infectious disease, and graft-rejection research. Peripheral blood mononuclear cells (PBMCs) are of particular interest when humanizing mice because of their ability to quickly engraft in immunodeficient mice. The majority of mature human immune cells when using PBMCs are of human T cell origin ($CD4^+$ and $CD8^+$) within a week to 10 days, and are ideal for short-term studies.

Combined with our **triple-immunodeficient NCG mouse model** (strain code 572; lacking functional/mature T, B, and NK cells, along with reduced macrophage and dendritic cell function), pre-qualified PBMCs allows researchers to quickly confirm results, without the need to qualify donor cells.

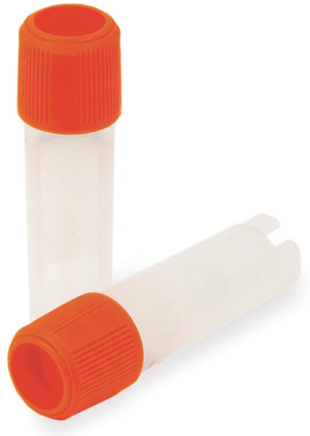
**+ Learn more**

## Benefits of the HuPBMC-NCG Mouse Model

- **Convenient** – HuPBMC-NCG mice are pre-injected and pre-tested for effective engraftment.
- **Efficient** – Pre-screened PBMCs save time, labor, and costs associated with donor qualification, and have no license requirements.
- **Quality** – PBMC cell inventory has been screened for engraftment rate, body weight loss, and study term. Cell numbers have been optimized for use in the NCG mouse model.
- **Trusted source** – The engrafted NCG mouse is the product of more than 100 years of combined experience between industry leaders, focusing on providing high-quality animal models and human biologics for research purposes.

Do It Yourself

# PBMC Humanization Kit



By providing a kit of both cells and mice together, you can control the timing of your study, which is a distinct advantage when dealing with a limited therapeutic window (i.e., slow tumor growth rates). PBMCs are easily transplanted into NCG mice through tail vein injection.

**Create Your Own Humanized Mice Models**

Our NCG/PBMC Select Humanization Kit is provided by HemaCare, a Charles River Company and a leading provider of biological blood products and services with 40+ years of experience. Now you have the ability to create your own humanized mice models on your own timeline.

+ Learn more

## Benefits

The DIY kit has all of the benefits associated with the HuPBMC-NCG model and the flexibility to customize the process according to your study timelines.

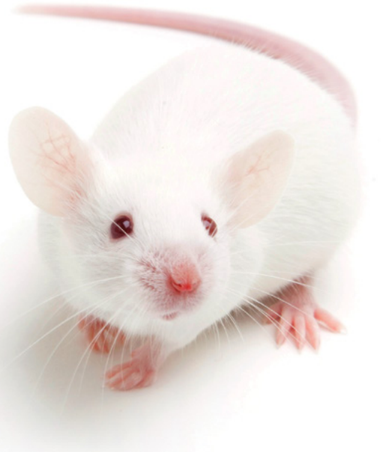
## Areas of Research

PBMC cells are ideal for short-term studies requiring a strong effector and memory T cell and NK cell function.

## Considerations

- Only available in North America.
- Animals should be housed and cared for according to immunodeficient mouse protocols (i.e., isolator housing which includes all feed, bedding, caging, water bottles, etc., should be autoclaved or irradiated before being introduced into the room/isolator).

# CD34+ Humanized Mouse Model



The HuCD34-NCG mouse is a study-ready model with a human-like immune system, created by adoptive transfer of CD34+ stem cells. HuCD34-NCG mice are an ideal *in vivo* platform to evaluate the effectiveness of compounds modulating the human immune system. The lack, or late onset, of graft-versus-host disease (GvHD) in humanized mice make them ideal for long-term studies.

NCG mice are humanized by adoptive transfer using human umbilical cord blood derived CD34+ stem cells from a qualified source, following myeloablation treatment. Animals are subsequently housed for 12-15 weeks according to our immunodeficient animal housing protocols.

+ Learn more

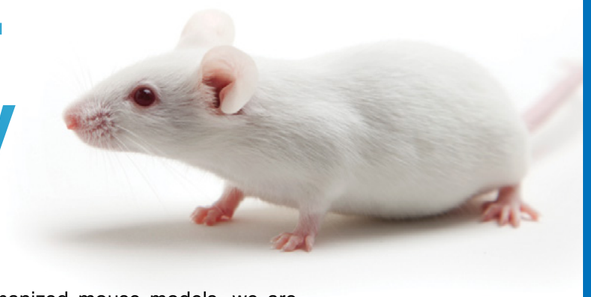
## Benefits

- **Convenient** – HuCD34-NCG mice are study-ready, expressing human immune cells.
- **Consistent** – Every mouse is pre-tested for humanization.
- **Stable** – Engraftment of hematopoietic cells provides a research platform for extended studies.
- **License-free** – The mice don't require additional licensing fees or royalty payments.

## Areas of Research

- Oncology
- Immunology
- Hematopoiesis
- Stem cell research
- Infectious disease
- Regenerative medicine
- Transplantation research
- Hematological research

# Hu-Mouse™ Exploratory Program



Due to the nature of research involving humanized mouse models, we are offering a trial program where you can determine if one of these specialized models, including the new HuCD34-NCG mouse, is a match with your studies. Participants will receive a discount off their first order in exchange for feedback of the respective model, since your input will be critical to the research community.

If you're interested in the Charles River Hu-Mouse™ Exploratory Program, call 1-800-522-7287 or email us at TAD@crl.com.

+ Learn more

## Considerations

- Only available in North America.
- Animals should be housed and cared for according to immunodeficient mouse protocols. (i.e., isolator housing, which includes all feed, bedding, caging, water bottles, etc., should be autoclaved or irradiated before being introduced into the room/isolator)

## How Can I Participate in the Charles River Hu-Mouse™ Exploratory Program?

1. Sign up for the exploratory program by submitting your information.
2. Request up to eight HuCD34-NCG mice for free and evaluate their effectiveness for your study.
3. Provide feedback on your experience with the HuCD34-NCG mouse.

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