charles river

Technical Book

Charles River Immunodeficient Models Xenograft Data Catalog

Fox Chase SCID® Beige Xenograft Data

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Introduction

Overview

Oncology is one of the leading areas of research into new therapeutics. Due to the challenges inherent in researching and developing anticancer therapeutics, it is critical that you have the right tools and resources available to you. Backed by decades of technical, scientific and veterinary experience, Charles River's global portfolio of high-quality oncology models gives you the benefit of partnering with an industry leader offering an infrastructure capable of advancing your research now and in the future. The following information provides an overview of Charles River's portfolio of immunodeficient and immunocompetent oncology animal models produced in North America.

Selecting the Appropriate Immunodeficient Animal Model

Immunodeficient animal models are extremely useful in a wide range of biomedical research, including infectious disease, stem cell, immunology and oncology studies. Due to the unique vulnerability that makes these models vital to research, their care and maintenance demands a high level of expertise and technological resources.

Selecting the most appropriate animal model to use is one of the more challenging steps a researcher must take when designing an oncology study. Quite often, resources and time are logged performing literature searches for what has been previously published or conducting trial and error pilot studies to assess positive tumor growth. As such, Charles River has developed the following information in an effort to assist you in expediting your model selection process.

The following table illustrates the Charles River portfolio of immunodeficient animal models. Depending on your research design and cell line, it is critical to understand the level of immunodeficiency each model possesses.

Strain	Hair	T-Cell Deficient	B-Cell Deficient	NK Cell Deficient
Athymic Nude Mouse	No	Yes	No	No
CD-1® Nude Mouse	No	Yes	No	No
NU/NU Mouse	No	Yes	No	No
BALB/c Nude Mouse	No	Yes	No	No
NIH-III Mouse	No	Yes	Yes	Impaired
RNU Rat	No	Yes	No	No
SCID Hairless Outbred (SHO®) Mouse	No	Yes	Yes	No
SCID Hairless Congenic (SHC™) Mouse	No	Yes	Yes	No
Fox Chase SCID® Congenic Mouse	Yes	Yes	Yes	No
Fox Chase SCID® Beige Mouse	Yes	Yes	Yes	Impaired
NOD SCID Mouse	Yes	Yes	Yes	Impaired

Xenograft Data Catalog

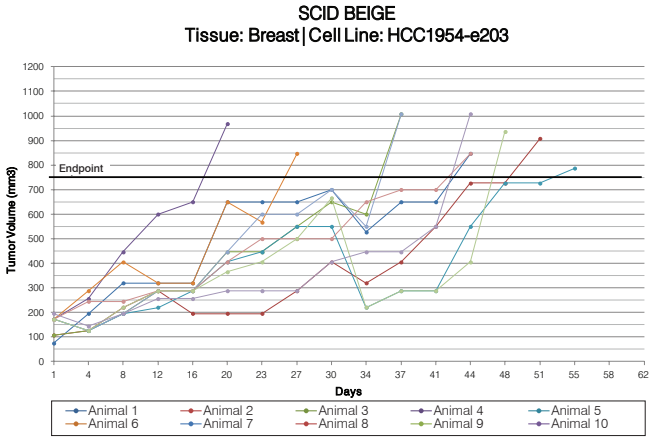
The following section contains tumor growth data collected from xenograft studies that were conducted by Charles River Discovery Services. This data represents various cell lines and histotypes implanted and grown in select Charles River immunodeficient animal models and should be used as reference data only. Volume 1 contains xenograft data* for the following models:

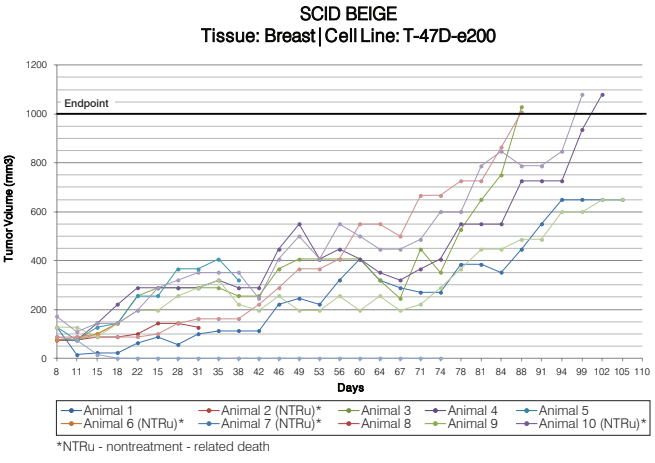
- Athymic Nude Mouse
- Fox Chase SCID® Congenic Mouse (C.B-17 SCID)
- Fox Chase SCID® Beige Mouse
- SCID Hairless Outbred (SHO®) Mouse

*Charles River will continue to expand our data catalog in upcoming volumes to include additional data on immunodeficient animal models produced by Charles River.

Fox Chase SCID® Beige Mouse
Strain Code: 250
Nomenclature: CB17.Cg-*Prkdc*^{scid}*Lyst*$^{bg\text{-}J}$/Crl
Origin: A congenic mouse that possesses both autosomal recessive mutations SCID (*Prkdc*^{scid}) and beige (*Lyst*$^{bg\text{-}J}$). The SCID mutation results in severe combined immunodeficiency affecting both the B and T lymphocytes. The beige mutation results in defective natural killer (NK) cells. This mouse was developed by Croy et al., at the University of Guelph by an intercross of C.B-17 SCID/SCID to C57BL/6 bg/bg mice. To Charles River in 1993.

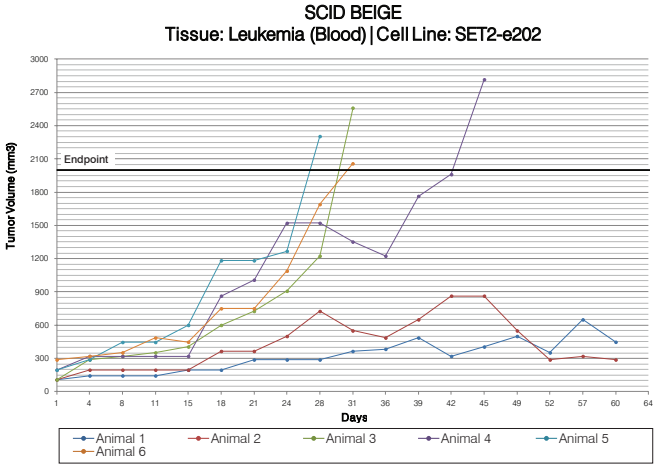
Breast





*NTRu - nontreatment - related death

Leukemia (Blood)



Cell Line Testing – 360 Diagnostics

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 that they are originating from the appropriate host species.

Rodent CLEAR

Research biologics are risk factors for vivarium biosecurity. Furthermore, a contamination may compromise the integrity of your *in vivo* research. Charles River offers TaqMan® PCR testing on the OpenArray® platform so you can perform precautionary screening on your research biologics to confirm that they are free of rodent infectious agents.

PCR Panels to Screen Cell Lines and Research Biologics for Rodent Infectious Agents

Agent	Mouse Essential Panel	Rat Essential Panel	Mouse/Rat Comprehensive Panel
Murine norovirus (MNV)	•		•
Mouse parvoviruses* (MPV-1, MPV-2, MPV-3, MPV-4, MVM)	•		•
Mouse hepatitis virus (MHV)	•		•
Reovirus (Type 1 & 3) (REO)	•	•	•
Lymphocytic choriomeningitis virus (LCMV)	•	•	•
Lactate dehydrogenase-elevating virus (LDV)	•	•	•
Mouse rotavirus (MRV/EDIM)	•		•
Theiler's murine encephalomyelitis virus (TMEV [GDVII])	•	•	•
Mousepox (Ectromelia) (ECTRO)	•		•
Hantavirus hantaan (HANT)	•		•
Hantavirus seoul (SEO)		•	•
Polyoma virus (POLY)	•		•
K virus (K)			•
Mouse adenovirus (MAV-1 & MAV-2)	•		•
Mouse cytomegalovirus (MCMV)			•
Mouse thymic virus (MTLV)			•
Pneumonia virus of mice (PVM)			•
Sendai (SEND)	•	•	•
Rat cytomegalovirus (RCMV)		•	•
Rat theilovirus (Theiler's-like virus of rats [RTV])		•	•
Rat parvoviruses* (RPV, KRV, RMV, H-1)		•	•
Rat rotavirus (IDIR)		•	•
Rat coronavirus (RCV, SDAV)		•	•
Mycoplasma (genus) (including *Acholeplasma laidlawii*)	•	•	•
Mycoplasma pulmonis	•	•	•
Positive template control	•	•	•
Negative template control	•	•	•
Spike inhibition control	•	•	•
Nucleic acid recovery control (NARC)	•	•	•

**Strain determination assays are performed on all positive results.*

Human CLEAR

To help maintain the validity of your *in vivo* research, it is important to perform precautionary screening on your research biologics to confirm that they are free of infectious agents. Charles River provides TaqMan® PCR testing to identify human infectious agents in any of your research biologics. TaqMan® technology is ten to one hundred times more sensitive than traditional gel-based qualitative PCR, and the use of an internal probe provides incomparable specificity. This technology allows samples to be analyzed without opening reaction tubes, which prevents the release of potentially contaminating PCR products, a common downfall associated with gel-based PCR assays.

PCR Panels to Screen Cell Lines and Research Biologics for Human Infectious Agents

Agent	Human HEP/HIV Panel	Human Essential Panel	Human Comprehensive Panel
Polyomavirus (John Cunningham virus)		•	•
Polyomavirus (BK virus)		•	•
Herpesvirus type 6		•	•
Herpesvirus type 7		•	•
Herpesvirus type 8		•	•
Parvovirus B19		•	•
Epstein-Barr virus		•	•
Hepatitis A virus		•	•
Hepatitis B virus	•	•	•
Hepatitis C virus	•	•	•
Papillomavirus type 16		•	•
Papillomavirus type 18		•	•
Human T-lymphotropic virus		•	•
Human cytomegalovirus		•	•
Human immunodeficiency virus type 1	•	•	•
Human immunodeficiency virus type 2	•	•	•
Adeno-associated virus		•	•
Human foamy virus		•	•
Mycoplasma (genus) (including *Acholeplasma laidlawii*)	•	•	•
Lymphocytic choriomeningitis virus (LCMV)			•
Hantavirus hantaan			•
Hantavirus seoul			•
Spike inhibition control	•	•	•
Nucleic acid recovery control (NARC)	•	•	•
Positive template control	•	•	•
Negative template control	•	•	•

Contamination CLEAR

The Cell Line Examination and Report (CLEAR) PCR Panel allows you to check the identity of your cell lines. It can detect inter-species contamination of less than 0.5% using TaqMan® PCR assays. Cells that can be differentiated include those originating from mouse, rat, Chinese hamster, Golden Syrian hamster, human and nonhuman primate (NHP) species.

Discovery Services

Charles River provides discovery services with extensive experience in cancer pharmacology and specialty oncology models. Our broad range of models and support services allows clients to choose the most appropriate study design and screening method to identify promising compounds and optimize lead candidates.

- *In Vitro* Assays
- *In Vivo* Pharmacology Services:
  - Human tumor xenografts
  - Patient-derived xenografts
  - Syngeneic models
  - Orthotopic models
- Patient-Derived Human Tumor Grafts
- Integrated Drug Discovery

Collection of Oncology Research Experiments (CORE)

The CORE (Collection of Oncology Research Experiments) is an online library of peer-reviewed publications designed to help you find the most appropriate research model for your oncology cell lines. Search through the publications by first selecting your tissue type. Simply select the cell line you want to reference and the publications will be listed by animal model. The publications were collected from various online resources and are non-curated. Visit www.criver.com/core for publications.

Supplemental Services

Charles River's global infrastructure gives you access to unparalleled products and services in the field of oncology. Whether you are in basic research and discovery or are ready to move your therapeutic into the clinical development phase, we are strategically positioned to help you accelerate your cancer research and anticancer drug development efforts.

Safety Assessment

- General Toxicology Studies
- Infusion Toxicology Studies
- IND-Enabling Programs
- Pathology Services
- Drug Metabolism and Pharmacokinetics
- Laboratory Sciences

Clinical Support

- Clinical Bioanalysis
- Clinical Pharmacokinetics
- Clinical Immunology and Biomarker Services
- Pathology for Clinical Trials

Manufacturing Support

- GMP-Compliant Biologics Testing
- Endotoxin Detection and Microbial Identification