



Charles River Immunodeficient Models Xenograft Data Catalog

Volume 1

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10	Prostate - Cell Line: Bx-PC3-e279	21	Lung - Cell Line: Calu3-e200		
10	Prostate - Cell Line: MDA-PCa2B-e204	21	Lung - Cell Line: H810-e202		
11	Renal - Cell Line: Caki-1-e226	21	Lung - Cell Line: H929-e204		
11	Renal - Cell Line: G-401-e203	21	Lung - Cell Line: MSTO-211H-e202		
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11	Sarcoma - Cell Line: SJSA-1-e203				

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.

Nude Models

Athymic Nude Mouse

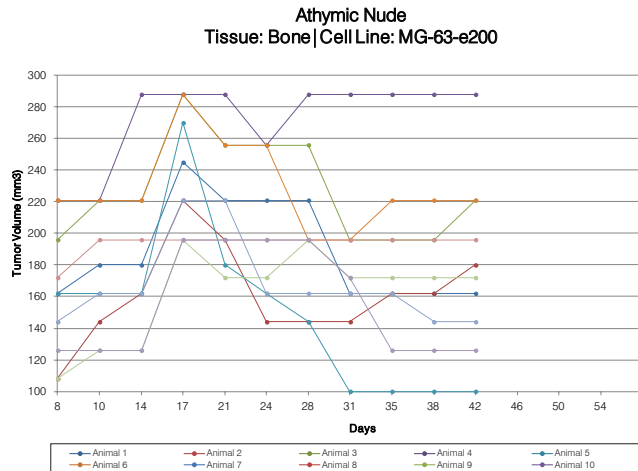
Strain Code: 490 (homozygous), heterozygous (haired) animals are not immunodeficient

Nomenclature: Crl:NU(NCr)-*Foxn1*^{nu}

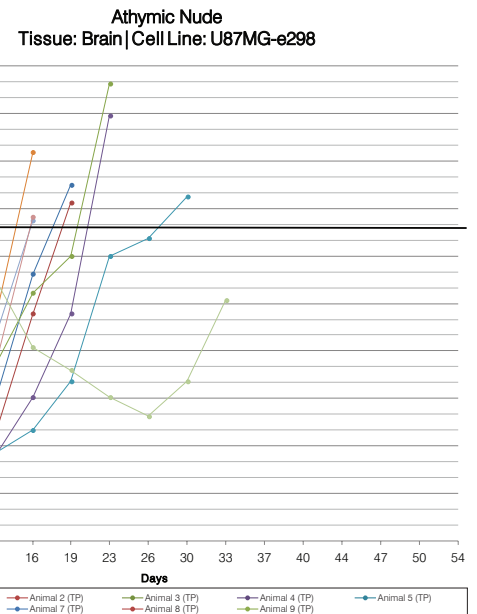
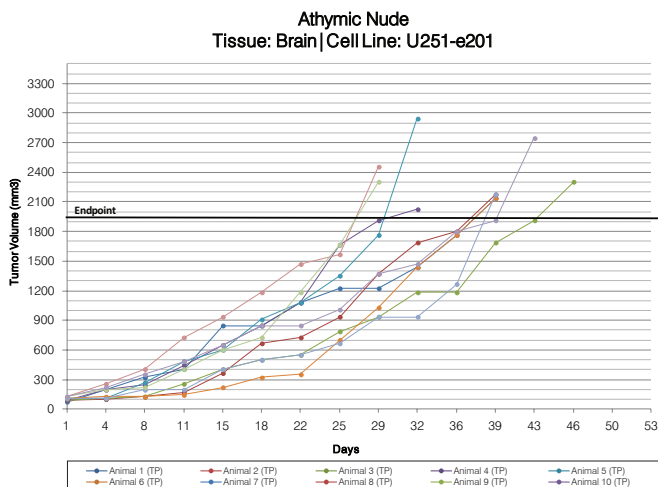
Origin: This immunodeficient nude mouse originated from NIH and was originally thought to be a BALB/c congenic. It was later determined that it was not inbred and is, therefore, maintained as an outbred. This model is not associated with any stock or strain. The animal lacks a thymus, is unable to produce T cells, and is therefore immunodeficient. To Charles River from NCI in 2010.



Bone

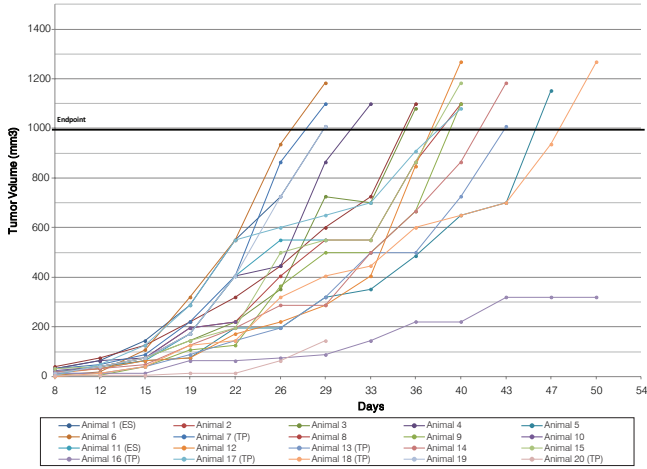


Brain

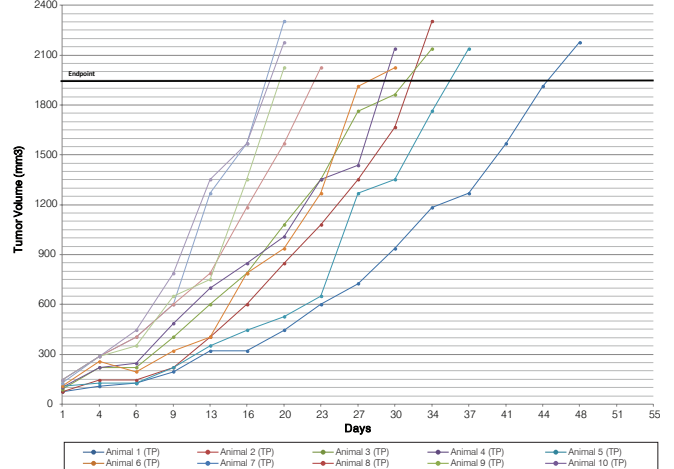


Breast

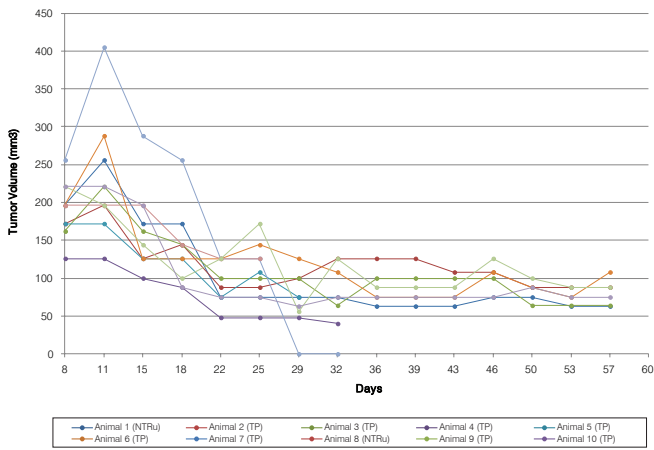
Athymic Nude
Tissue: Breast | Cell Line: MCF-7-e325



Athymic Nude
Tissue: Breast | Cell Line: MX-1-e263

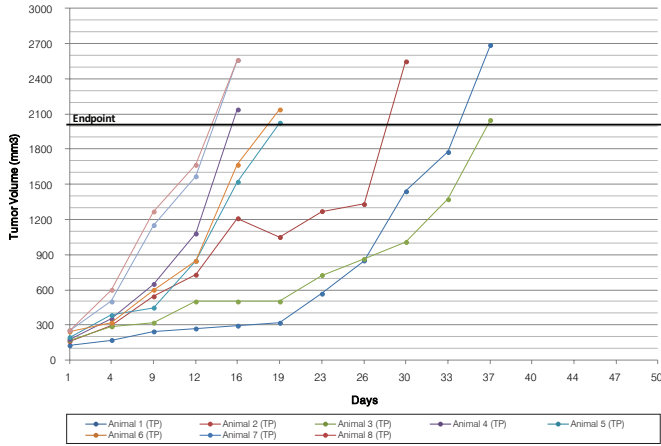


Athymic Nude
Tissue: Breast | Cell Line: ZR-75-30-e201

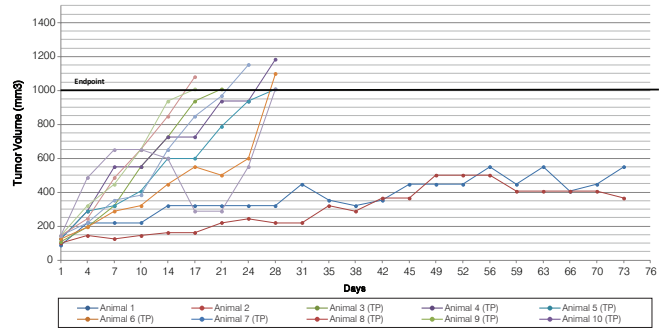


Colon

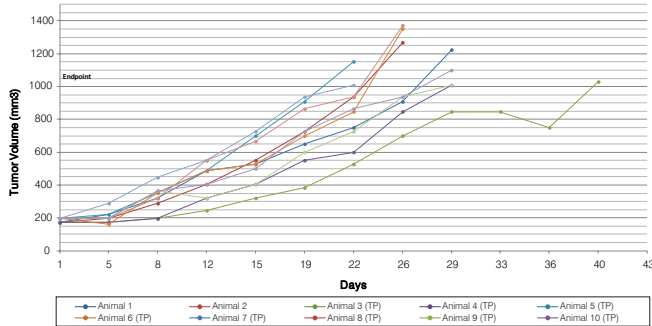
Athymic Nude
Tissue: Colon | Cell Line: CL-34-e203



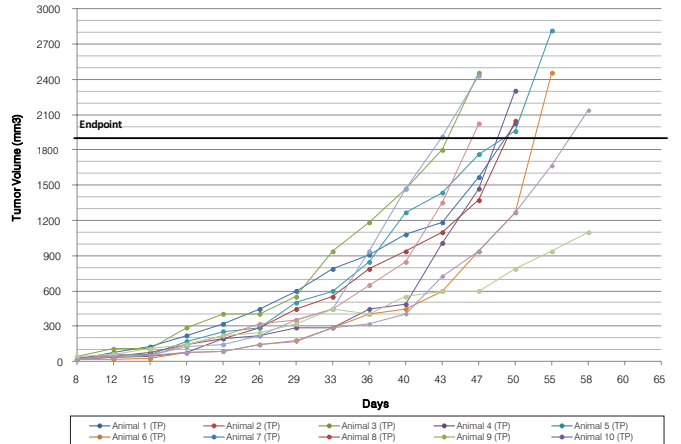
Athymic Nude
Tissue: Colon | Cell Line: Colo-205-e286



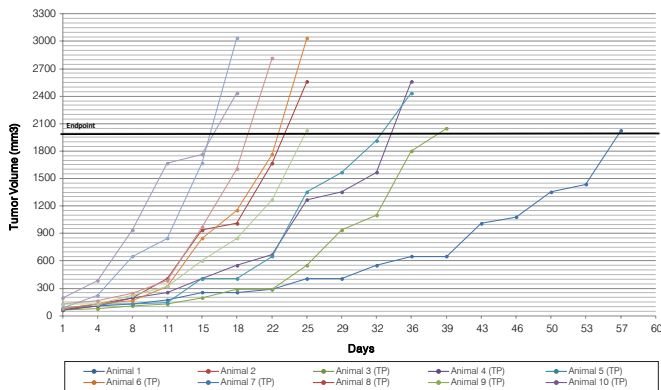
Athymic Nude
Tissue: Colon | Cell Line: LoVo-e216



Athymic Nude
Tissue: Colon | Cell Line: HCT116-E382

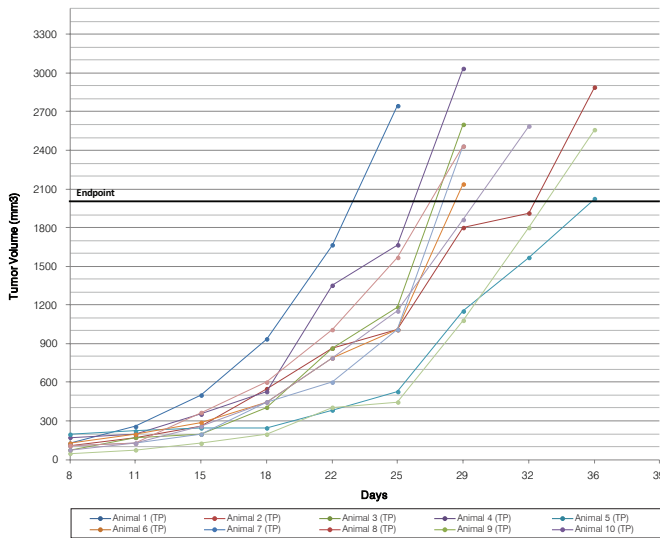


Athymic Nude
Tissue: Colon | Cell Line: LS174T-e264

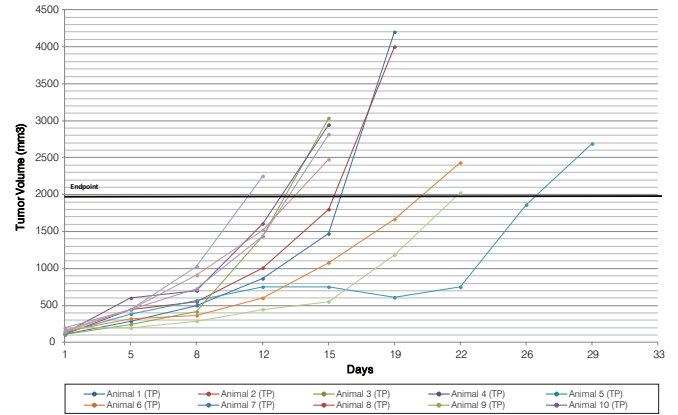


Leukemia (Blood)

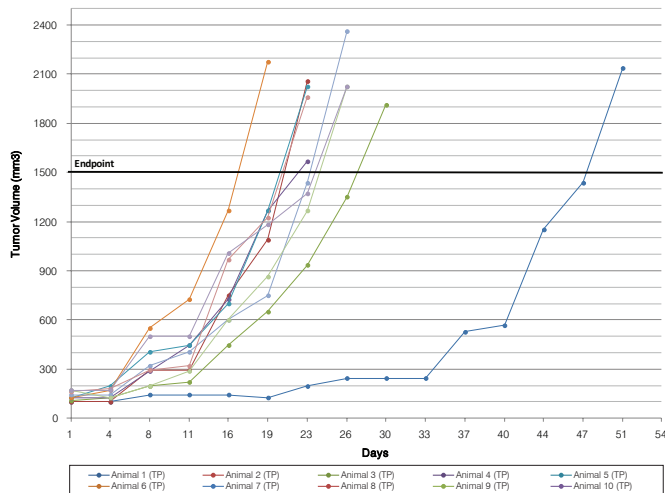
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Tissue: Leukemia (Blood) | Cell Line: HL-60-e201



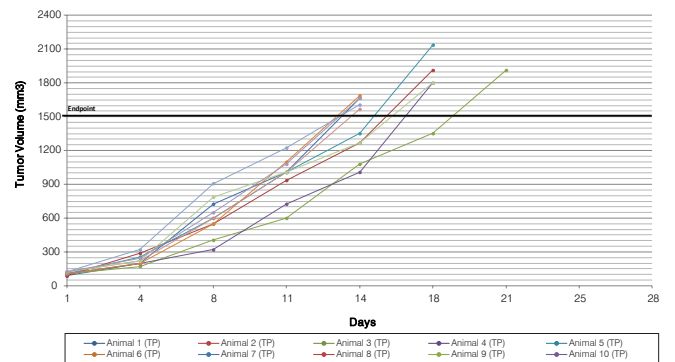
Athymic Nude
Tissue: Leukemia | Cell Line: MOLM-13-e200



Athymic Nude
Tissue: Leukemia (Blood) | Cell Line: MV411-e289

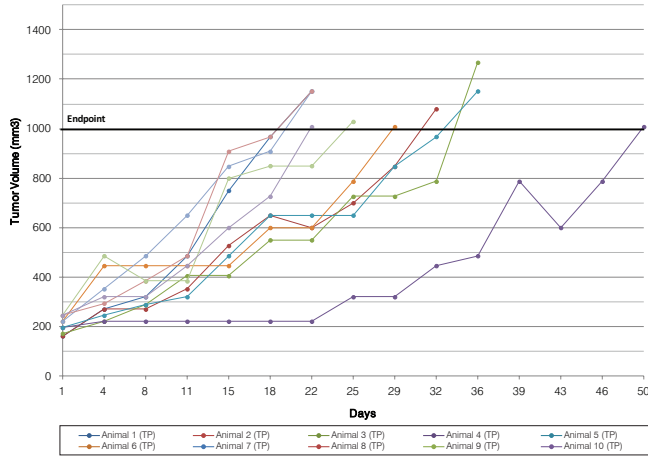


Athymic Nude
Tissue: Liver | Cell Line: SNU-398-e202

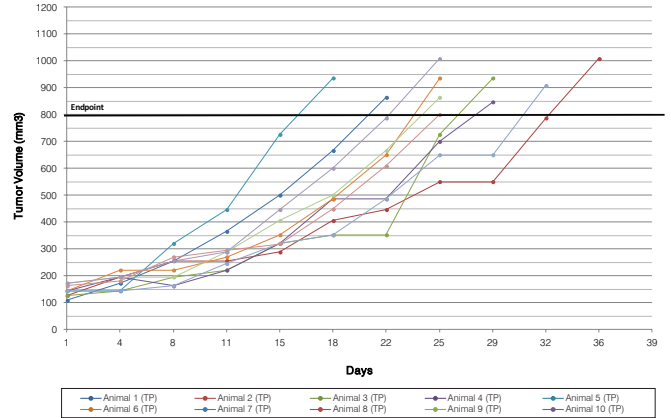


Lung

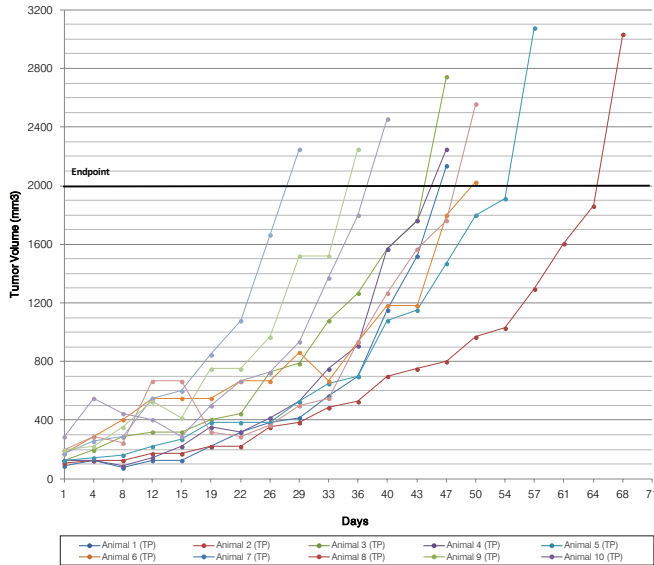
Athymic Nude
Tissue: Lung | Cell Line: A427-e229



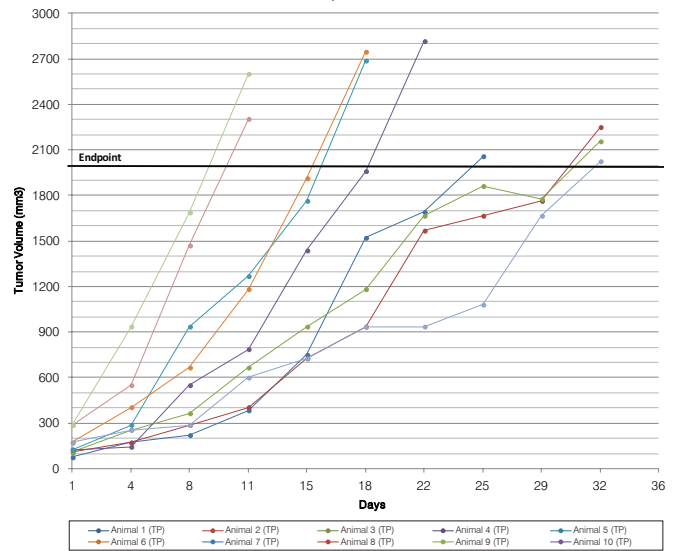
Athymic Nude
Tissue: Lung | Cell Line: A549-e337



Athymic Nude
Tissue: Lung | Cell Line: Calu-6-e204

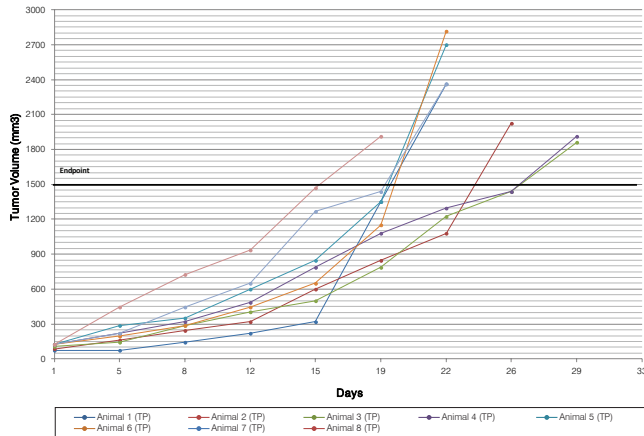


Athymic Nude
Tissue: Lung | Cell Line: H460-e337

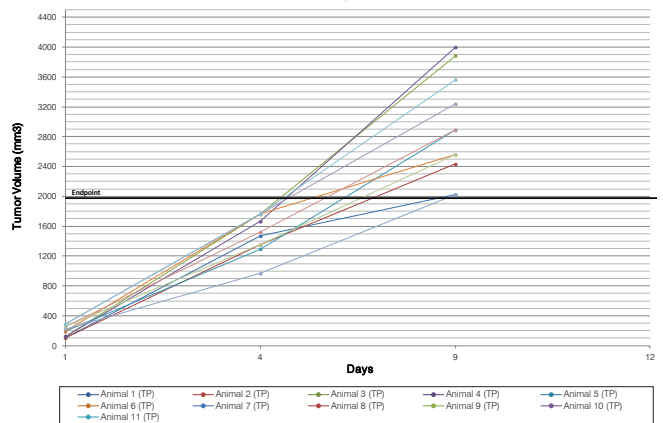


Lymphoma (Blood)

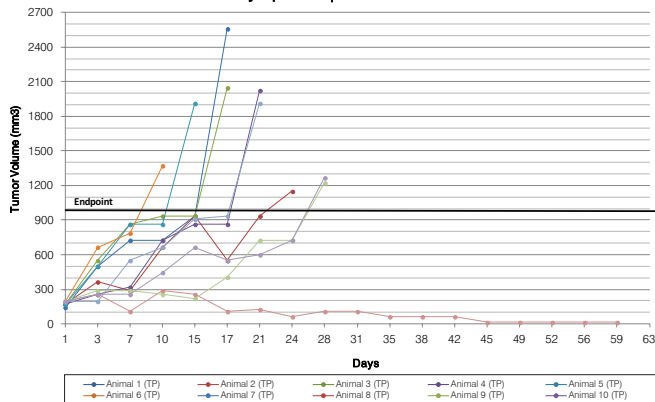
Athymic Nude
Tissue: Lymphoma | Cell Line: Daudi-e202



Athymic Nude
Tissue: Lymphoma | Cell Line: Ramos-e213

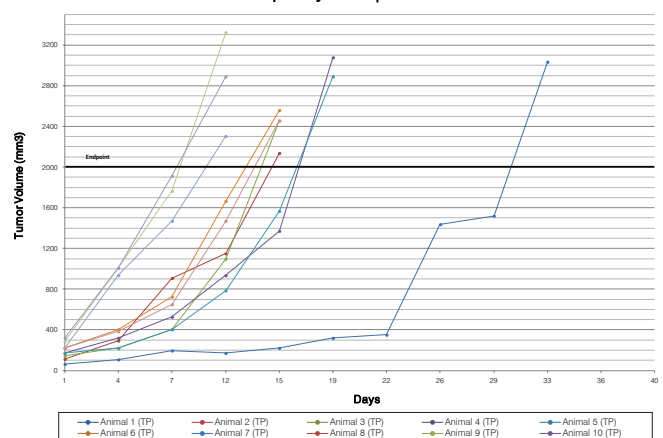


Athymic Nude
Tissue: Lymphoma | Cell Line: SU-DHL-6-e204

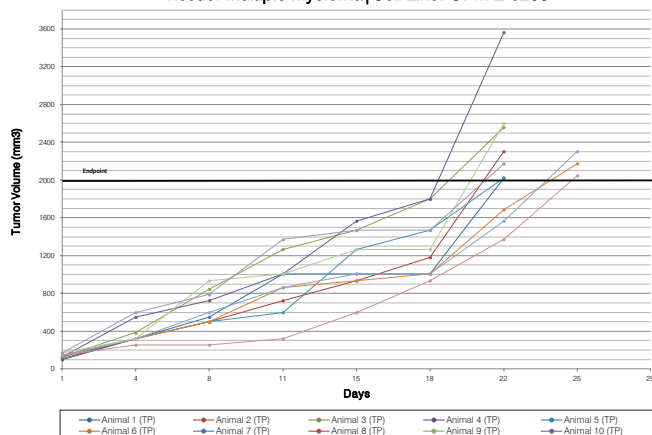


Multiple Myeloma

Athymic Nude
Tissue: Multiple Myeloma | Cell Line: H929-e243

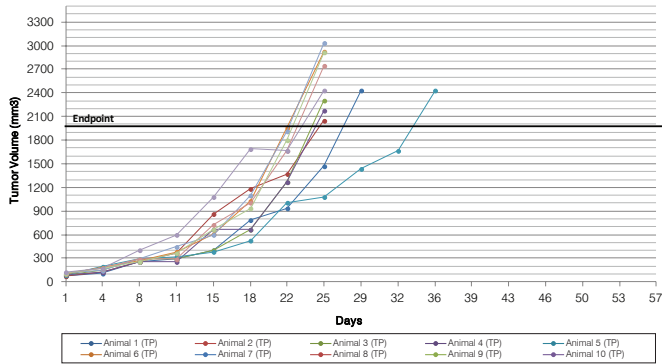


Athymic Nude
Tissue: Multiple Myeloma | Cell Line: OPM-2-e206

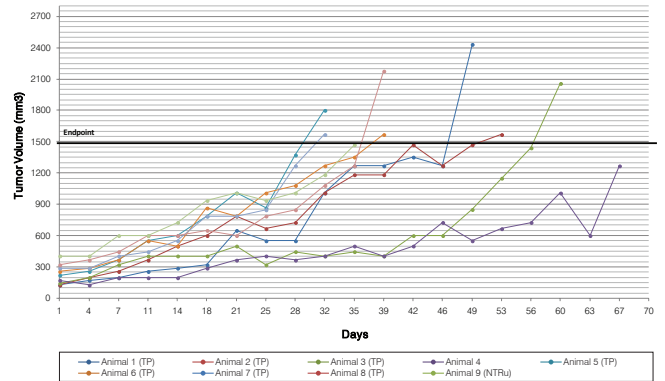


Ovarian

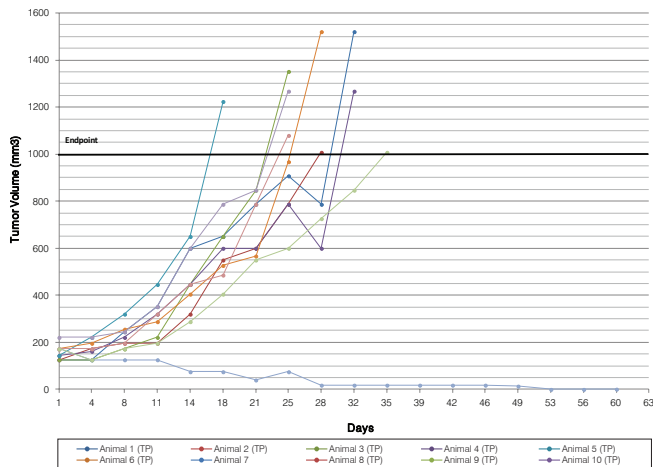
Athymic Nude
Tissue: Ovarian | Cell Line: A2780-AD10-e200



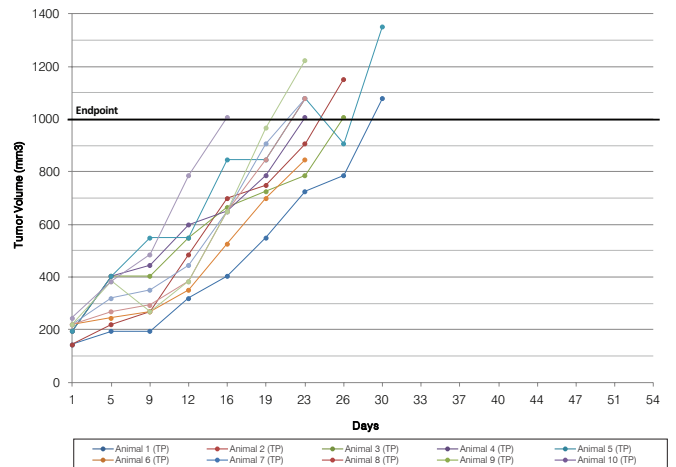
Athymic Nude
Tissue: Ovarian | Cell Line: OVCA3-e202



Athymic Nude
Tissue: Ovarian | Cell Line: OVCA5-e203

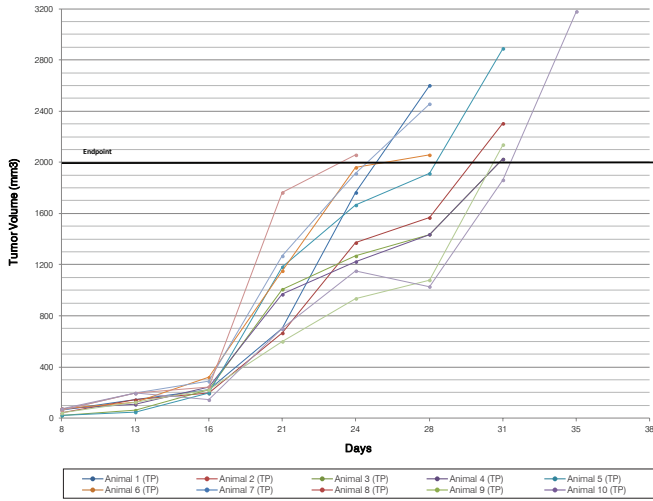


Athymic Nude
Tissue: Ovarian | Cell Line: TOV-21G-e211

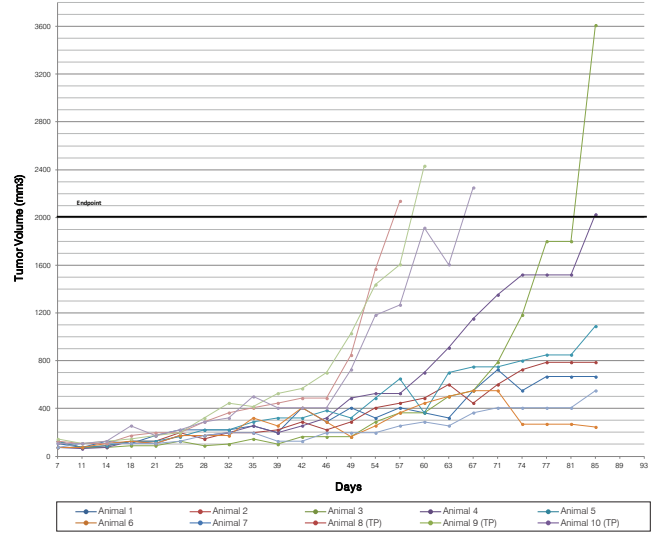


Pancreas

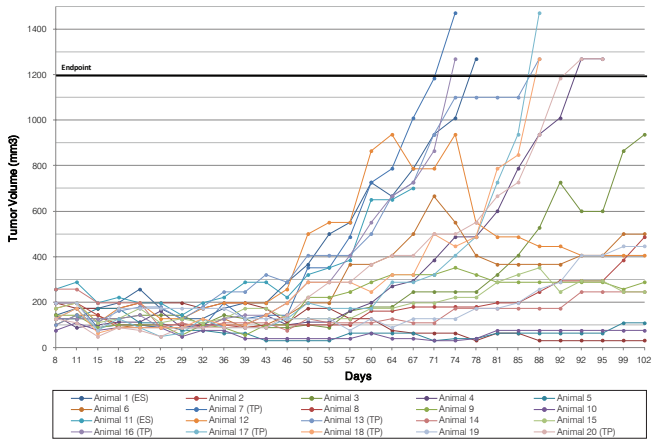
Athymic Nude
Tissue: Pancreas | Cell Line: KP4-e200



Athymic Nude
Tissue: Pancreas | Cell Line: MiaPaCa-2-e276

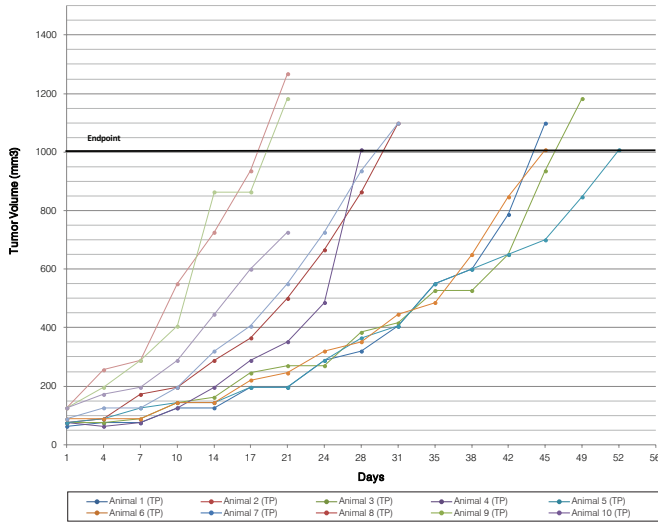


Athymic Nude
Tissue: Pancreas | Cell Line: PANC1-e268

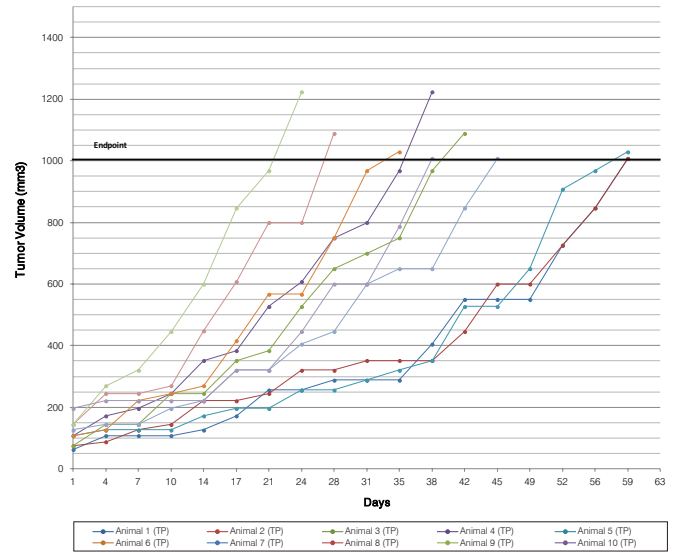


Prostate

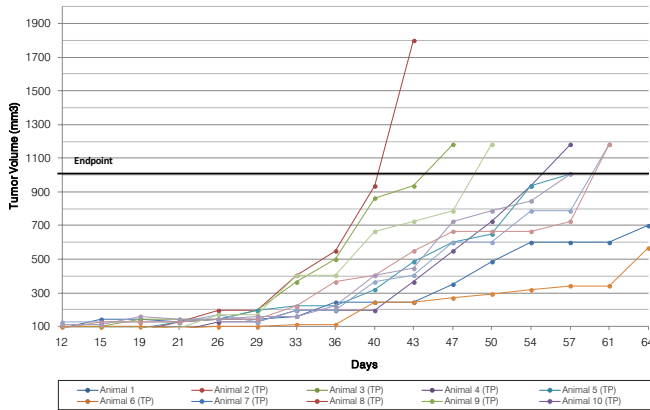
Athymic Nude
Tissue: Prostate | Cell Line: Bx-PC3-e274



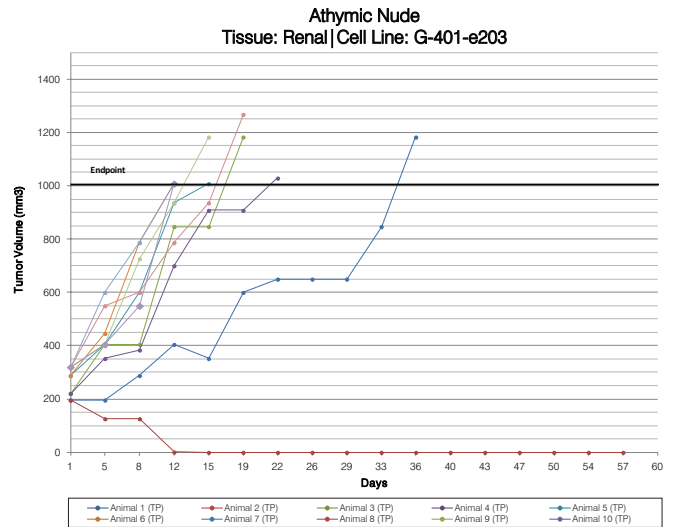
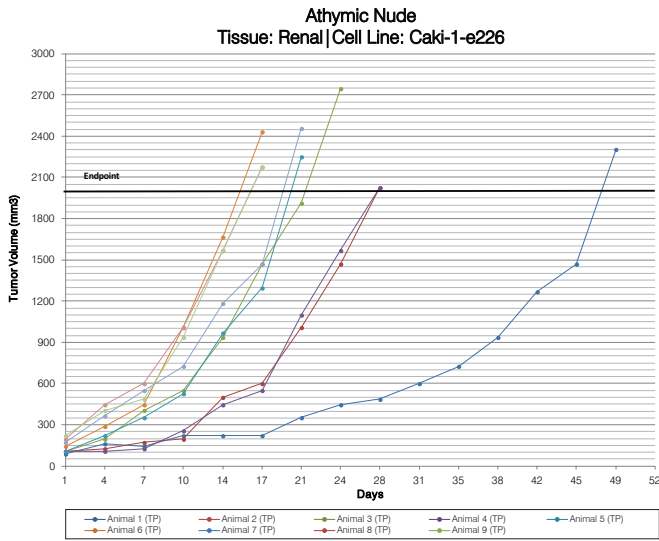
Athymic Nude
Tissue: Prostate | Cell Line: Bx-PC3-e279



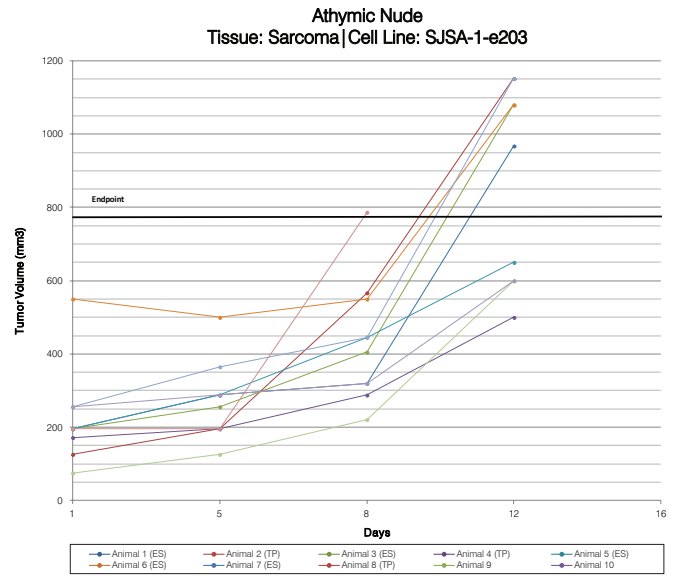
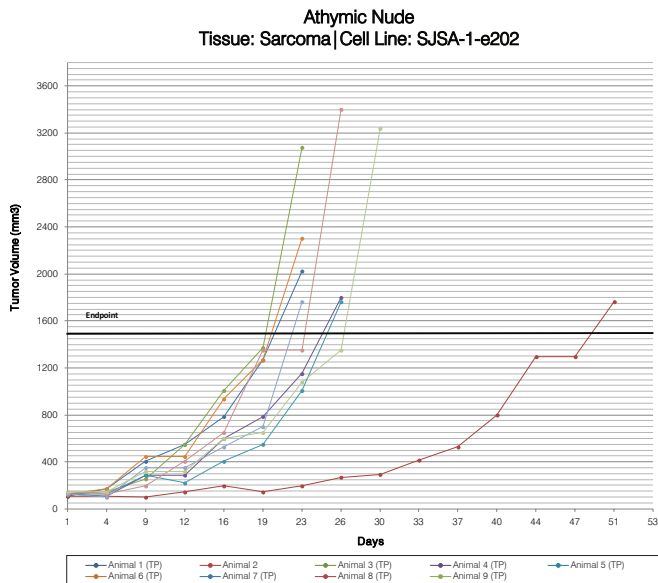
Athymic Nude
Tissue: Prostate | Cell Line: MDA-PCa2B-e204



Renal

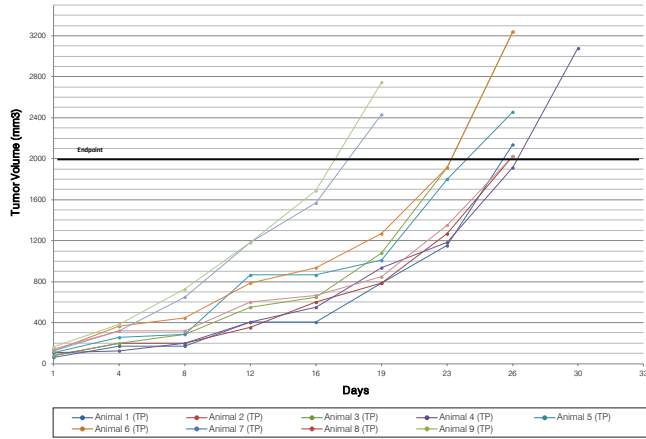


Sarcoma

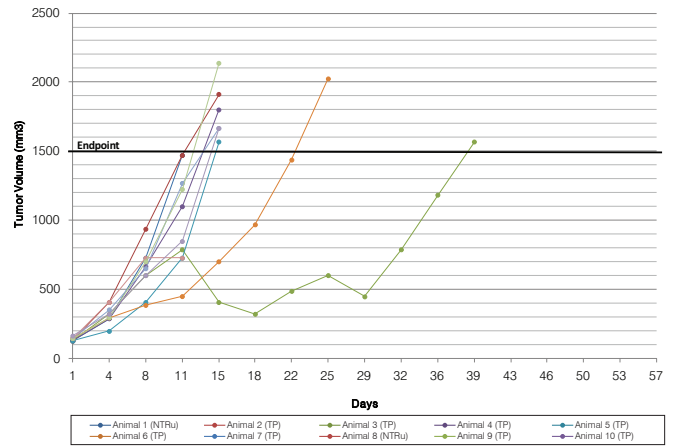


Skin

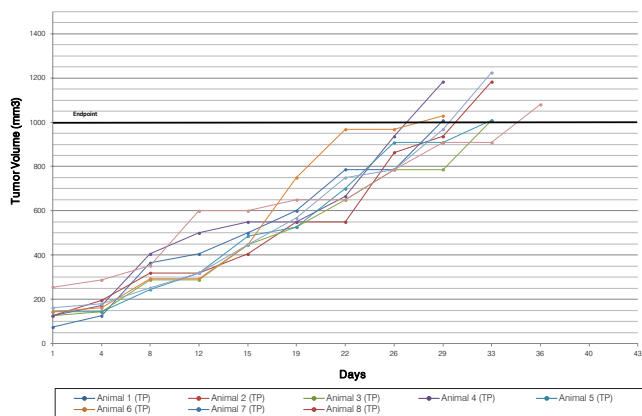
Athymic Nude
Tissue: Skin | Cell Line: A375-e319



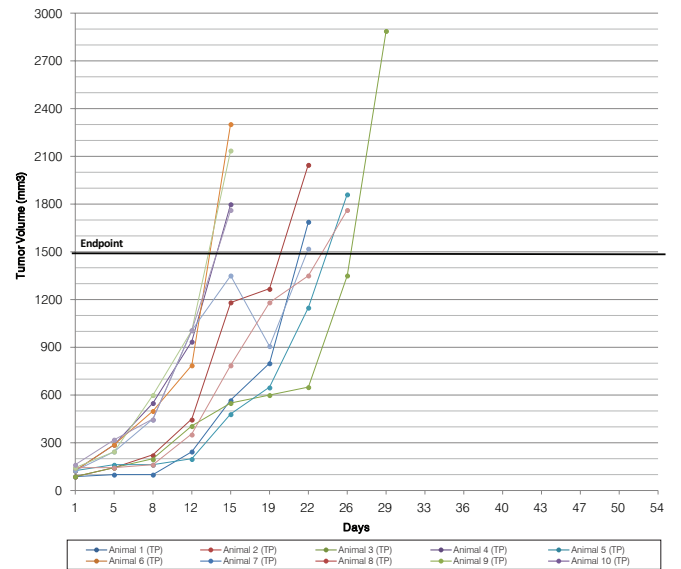
Athymic Nude
Tissue: Skin | Cell Line: A2058-e269



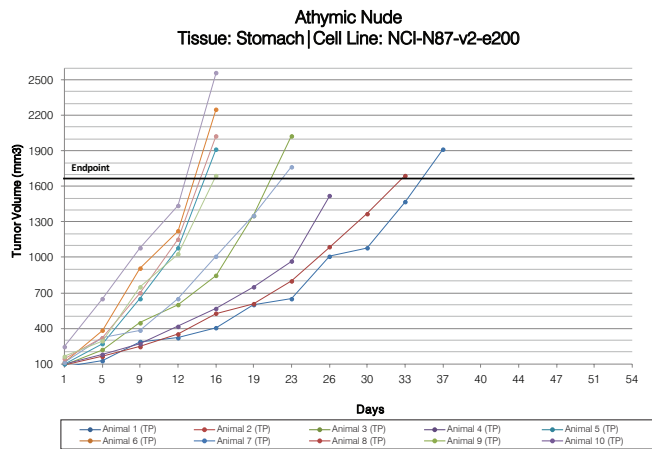
Athymic Nude
Tissue: Skin | Cell Line: MESO MSTO-211H



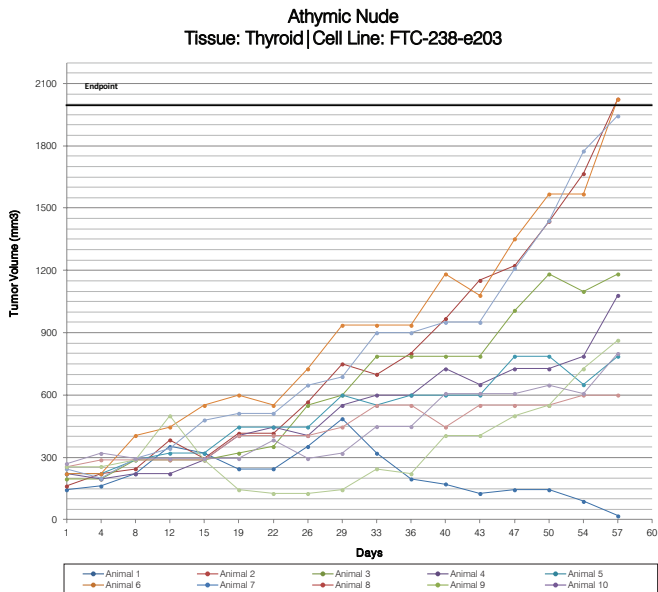
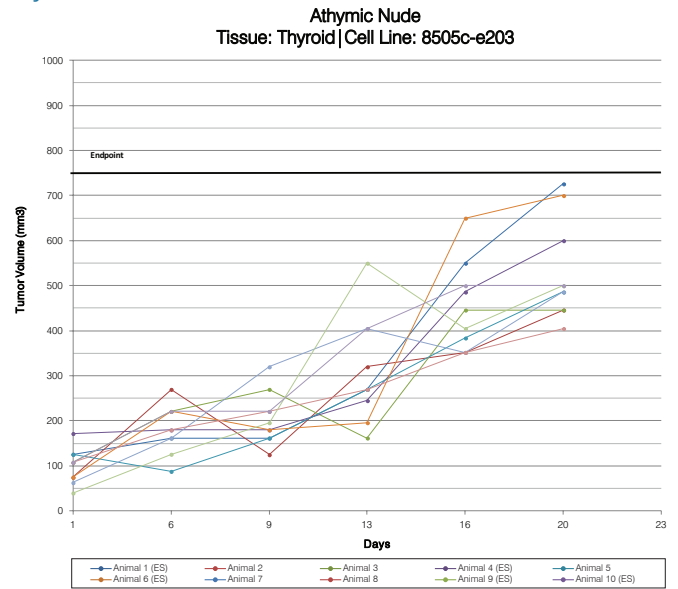
Athymic Nude
Tissue: Skin | Cell Line: CHL-1-e204



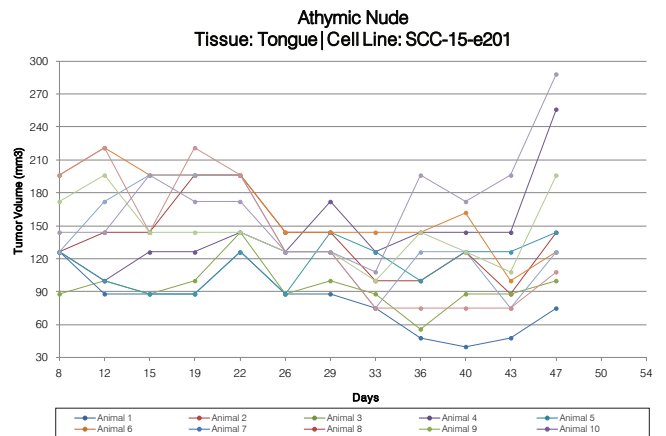
Stomach



Thyroid

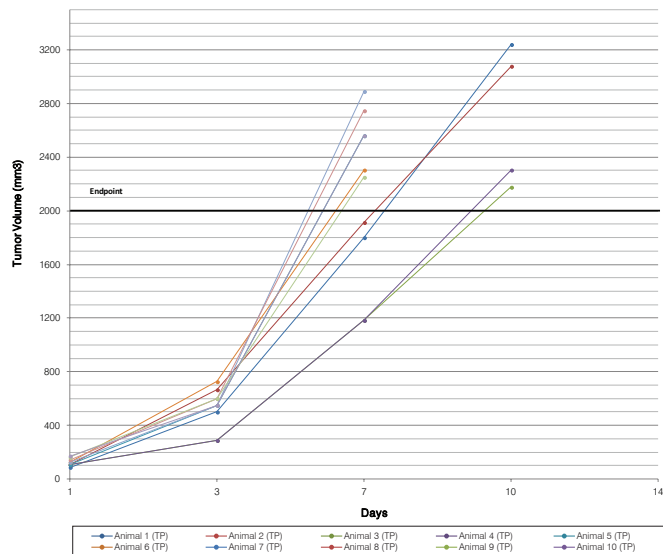


Tongue

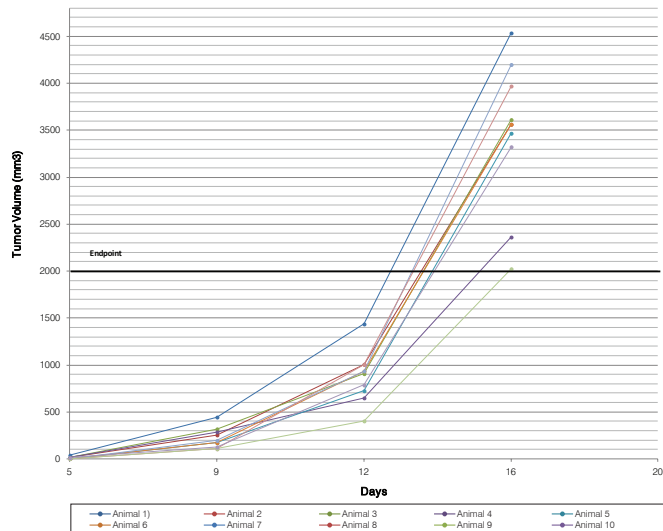


Uterine

Athymic Nude
Tissue: Uterine | Cell Line: MFE-280-e201



Athymic Nude
Tissue: Uterine | Cell Line: MFE-280-e203



Severe Combined Immunodeficiency (SCID) Models

SCID Hairless Outbred (SHO®) Mouse (C.B-17 SCID)

Strain Code: 474

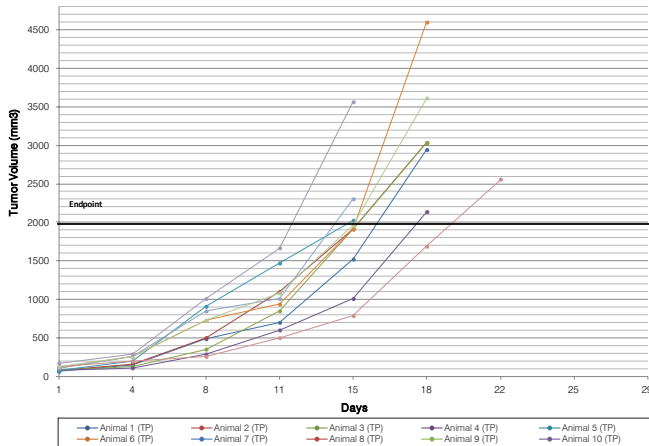
Nomenclature: Crl:SHO-Prkdc^{scid}Hr^{tr}

Origin: The hairless SCID mouse was produced by Charles River Research Models in 2007 by intercrossing the Crl:HA-Prkdc^{scid} and Crl:SKH1-Hr^{tr} stocks. The resulting animals are homozygous for the Prkdc^{scid} and the Hr^{tr} mutations and thus exhibit the severe combined immunodeficiency phenotype characteristic of SCID mice and are also hairless.



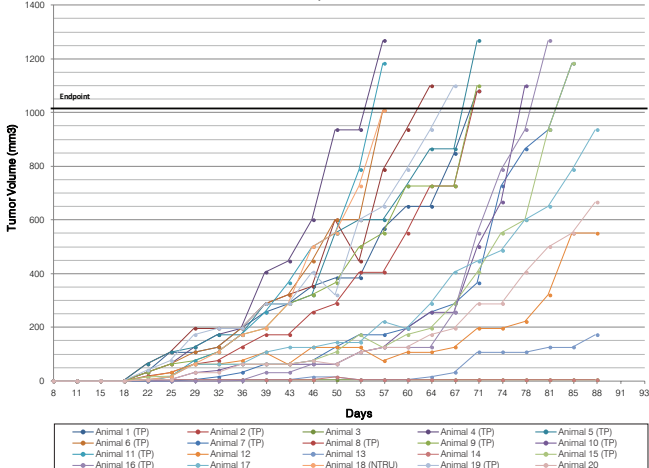
Brain

SCID HAIRLESS OUTBRED (SHO®)
Tissue: Brain | Cell Line: U87MG-e275

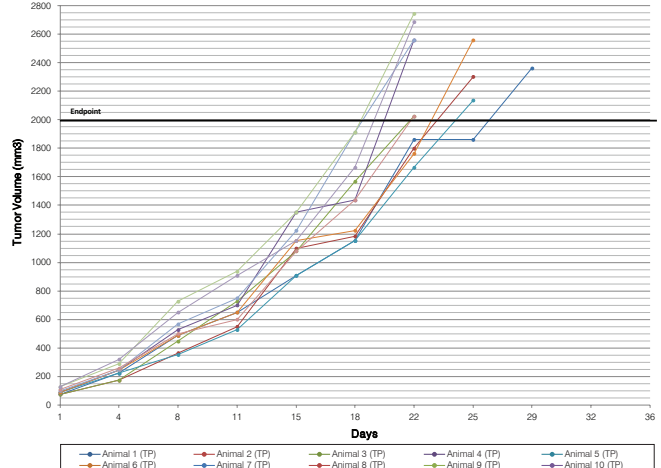


Breast

SCID HAIRLESS OUTBRED (SHO®)
Tissue: Breast | Cell Line: BT474-e271

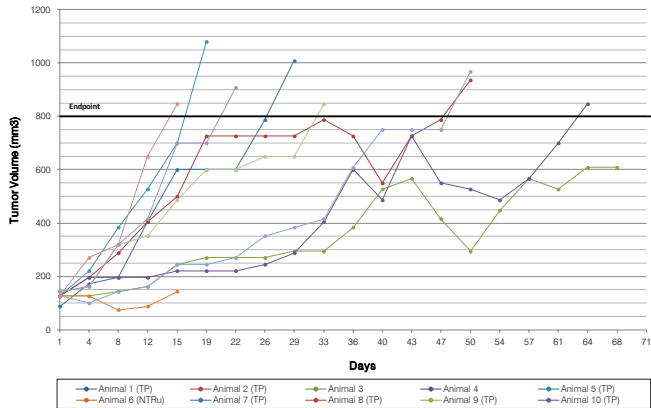


SCID HAIRLESS OUTBRED (SHO®)
Tissue: Breast | Cell Line: MX-1-e253



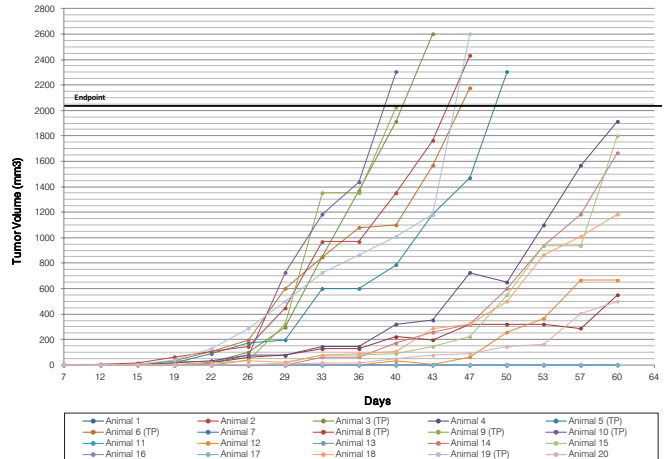
Lung

SCID HAIRLESS OUTBRED (SHO®)
Tissue: Lung | Cell Line: A549-e309



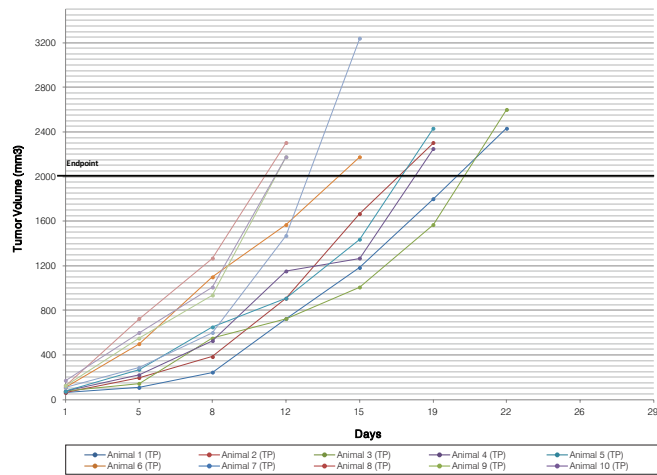
Lymphoma (Blood)

SCID HAIRLESS OUTBRED (SHO®)
Tissue: Lymphoma (Blood) | Cell Line: Granta-519-e209



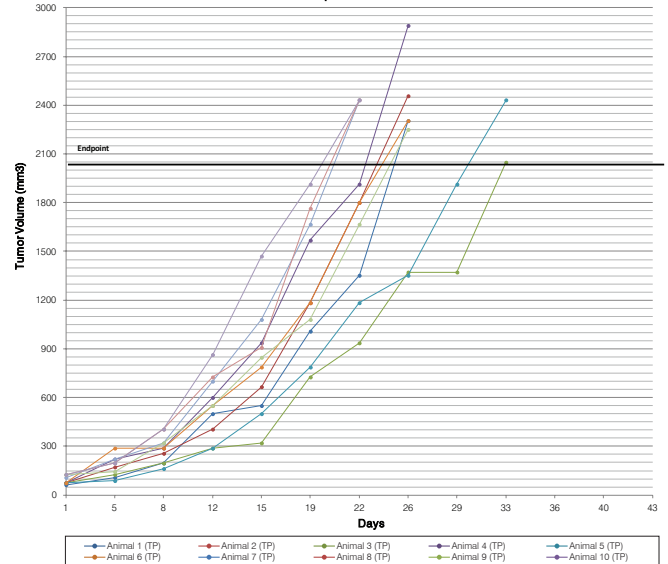
Ovarian

SCID HAIRLESS OUTBRED (SHO®)
Tissue: Ovarian | Cell Line: A2780-e297



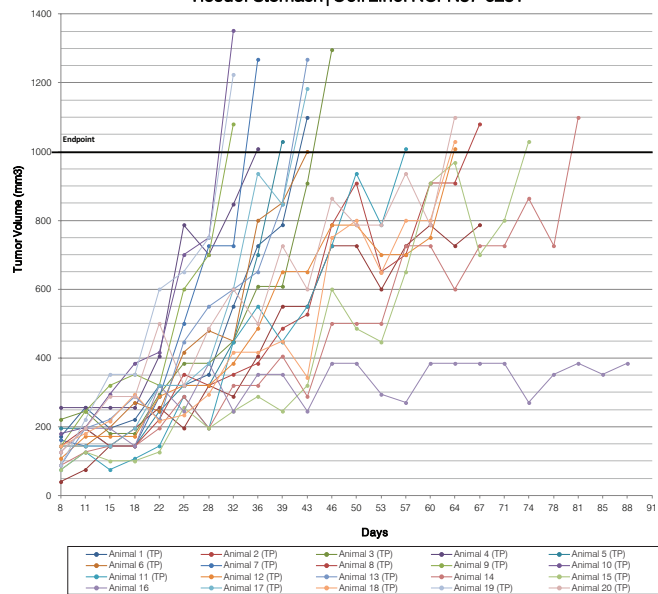
Skin

SCID HAIRLESS OUTBRED (SHO®)
Tissue: Skin | Cell Line: A375-e309



Stomach

SCID HAIRLESS OUTBRED (SHO®)
Tissue: Stomach | Cell Line: NCI-N87-e281



Fox Chase SCID® Congenic Mouse

Strain Code: 236

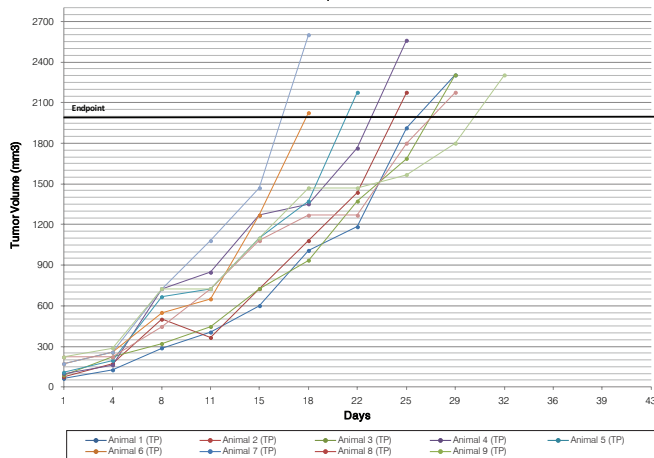
Nomenclature: CB17/lcr-Prkdc^{scid}/lcrIcoCrl

Origin: SCID mice possess a genetic autosomal recessive mutation (SCID). Discovered in 1980 by Bosma in C.B-17/lcr mice at Fox Chase Cancer Center. SCID mice show a severe combined immunodeficiency affecting both B and T lymphocytes. They have normal natural killer (NK) cells, macrophages, and granulocytes. To Charles River in 1991 from a Charles River France foundation colony.



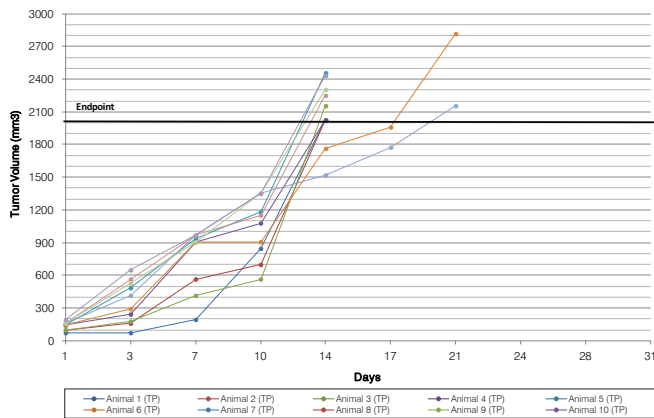
Bladder

CB17SCID
Tissue: Bladder | Cell Line: SW780-e203

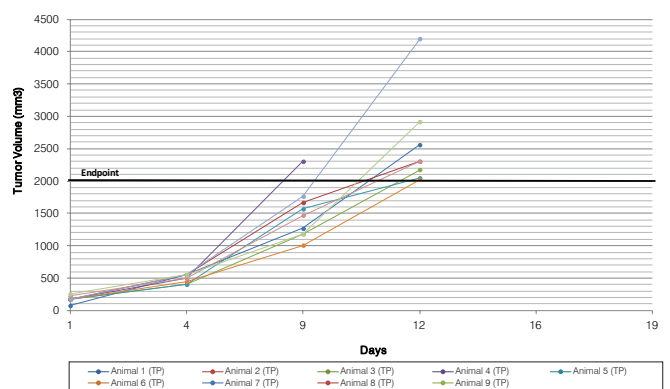


Blood

CB17SCID
Tissue: Blood | Cell Line: Daudi-e207

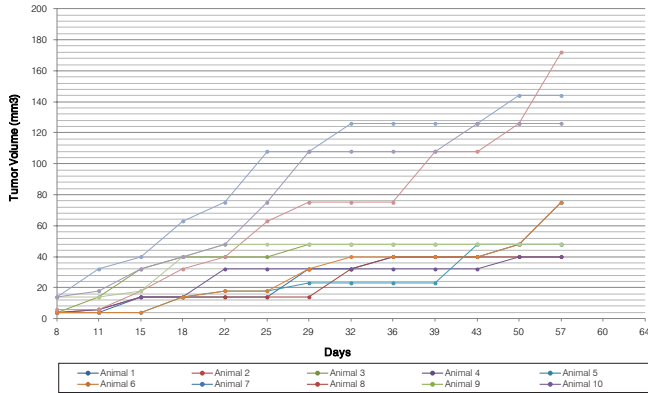


CB17SCID
Tissue: Blood | Cell Line: DOHH-2-e207



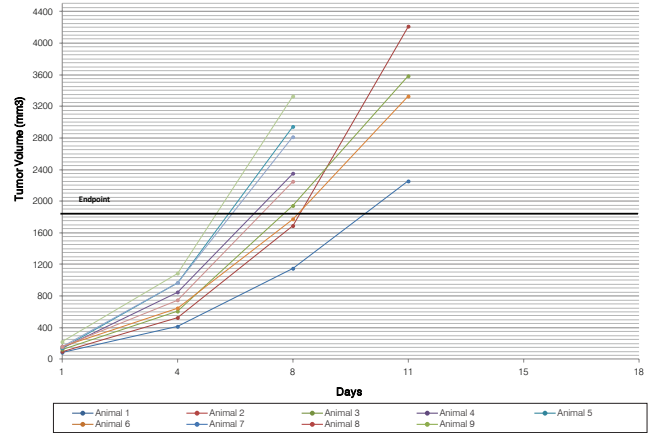
Bone

CB17SCID
Tissue: Bone | Cell Line: Saos-2-e202



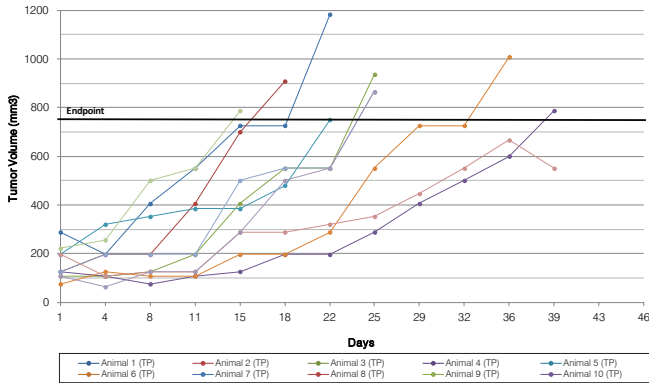
Brain

CB17SCID
Tissue: Brain | Cell Line: SF295-v2-e200

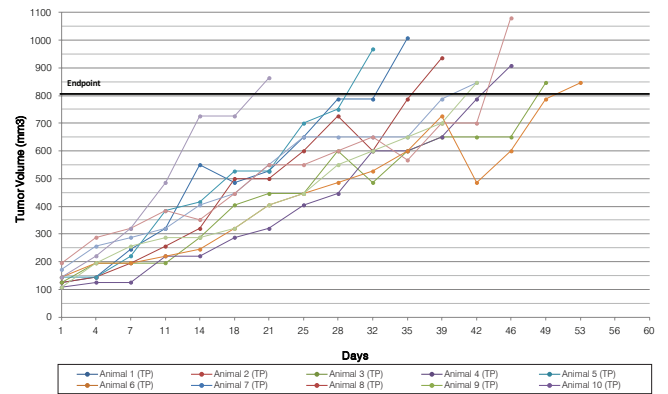


Breast

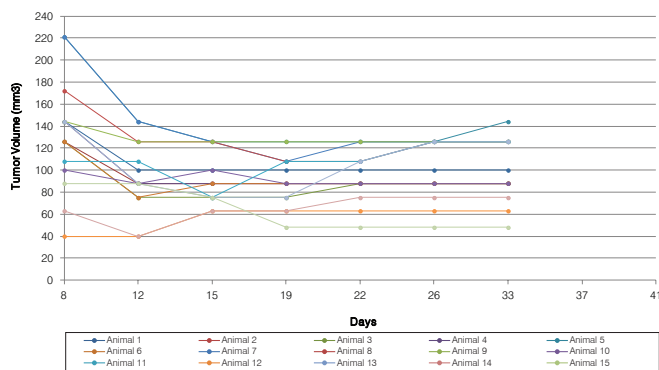
CB17SCID
Tissue: Breast | Cell Line: BT474-e221



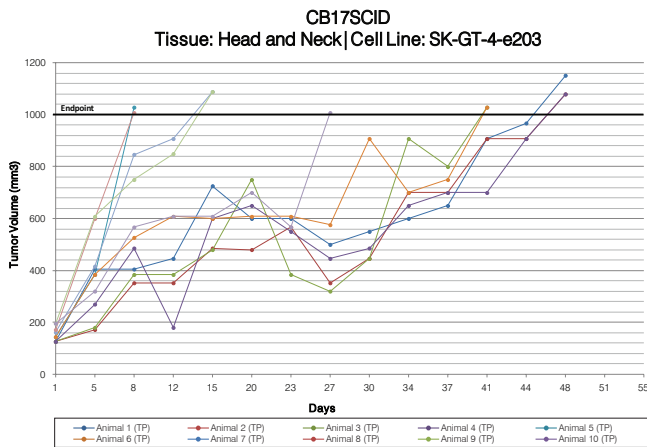
CB17SCID
Tissue: Breast | Cell Line: JIMT-1-e203



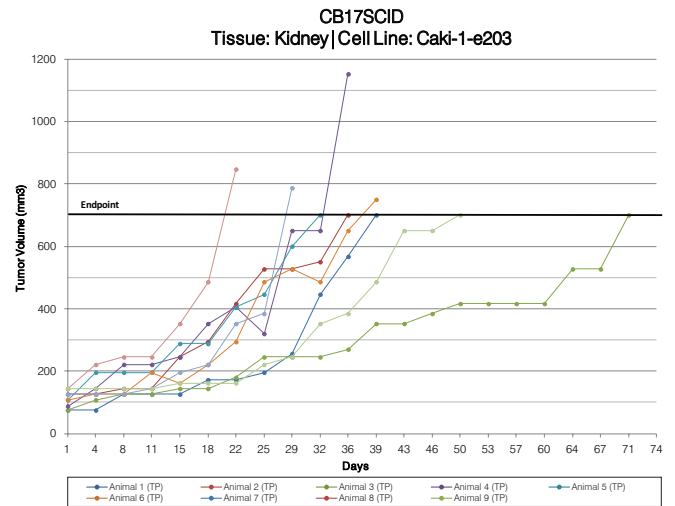
CB17SCID
Tissue: Breast | Cell Line: SKBR3-e200



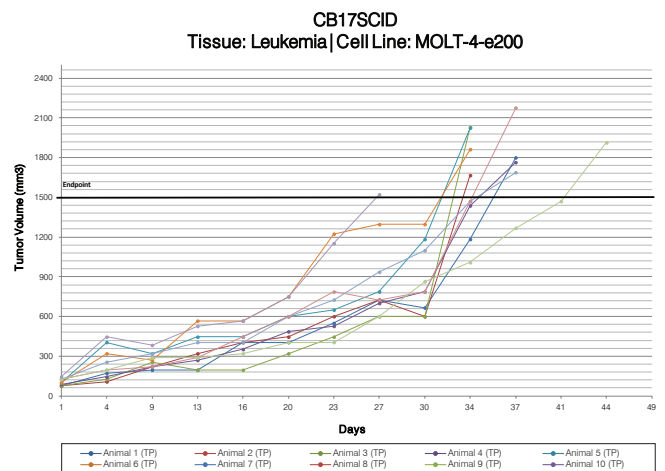
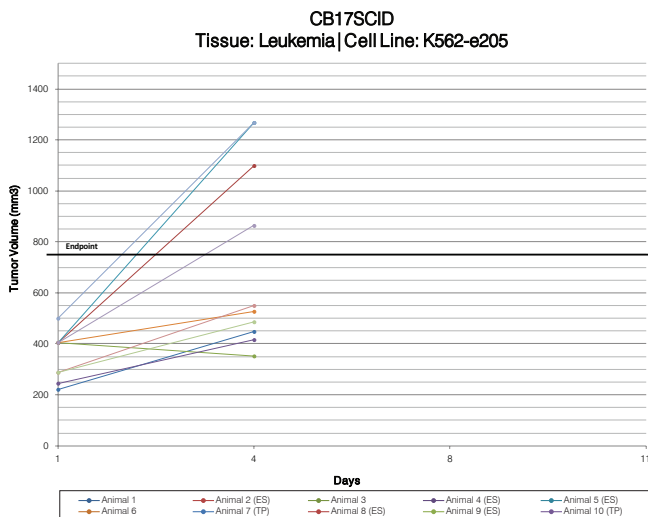
Head and Neck



Kidney

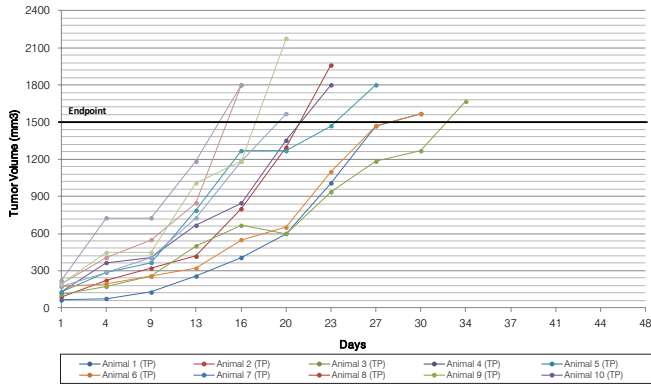


Leukemia (Blood)

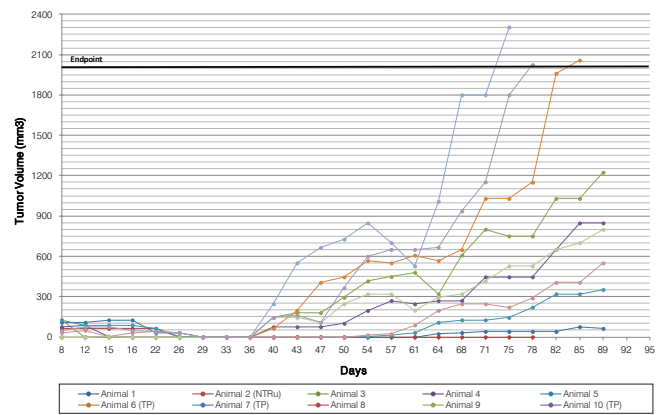


Liver

CB17SCID
Tissue: Liver | Cell Line: Hep3B-e220

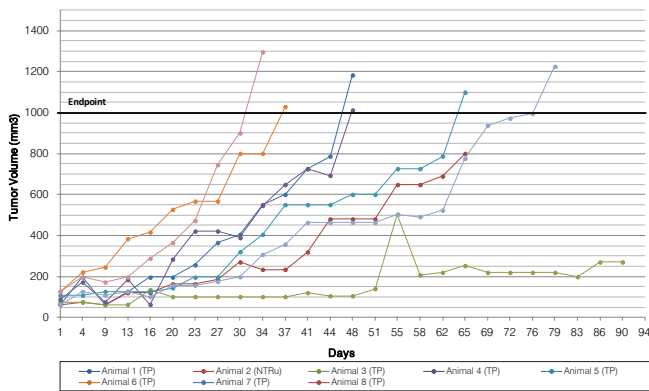


CB17SCID
Tissue: Liver | Cell Line: HepG2-e201

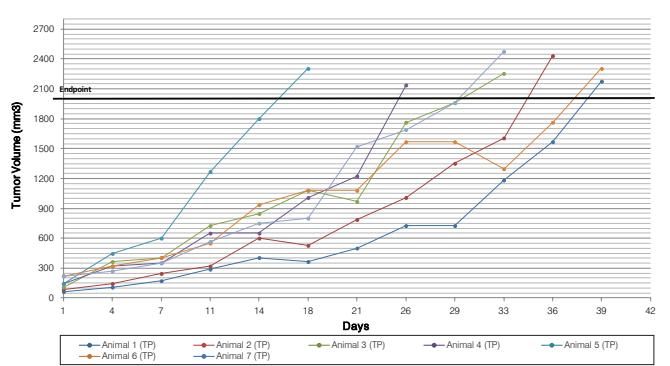


Lung

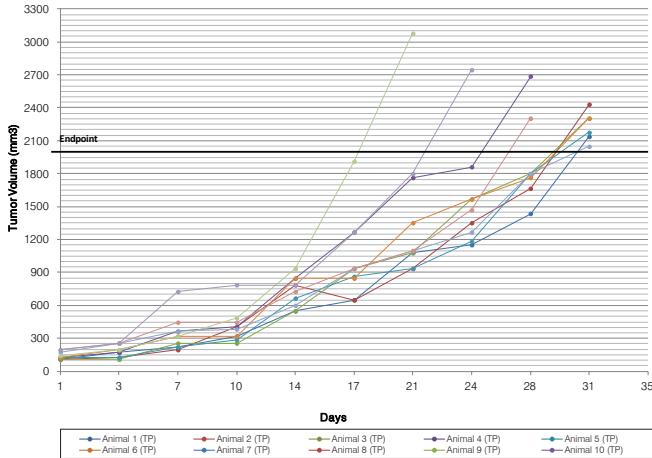
CB17SCID
Tissue: Lung | Cell Line: Calu3-e200



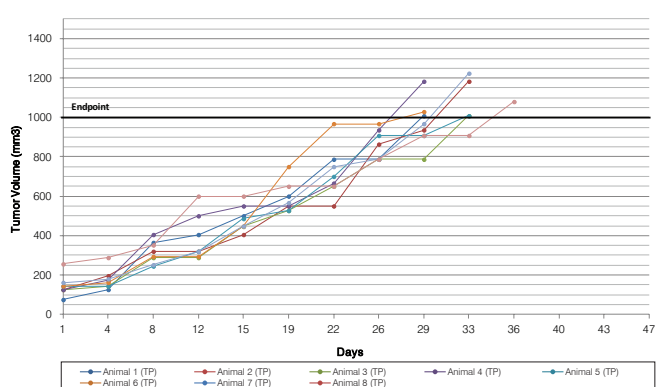
CB17SCID
Tissue: Lung | Cell Line: H810-e202



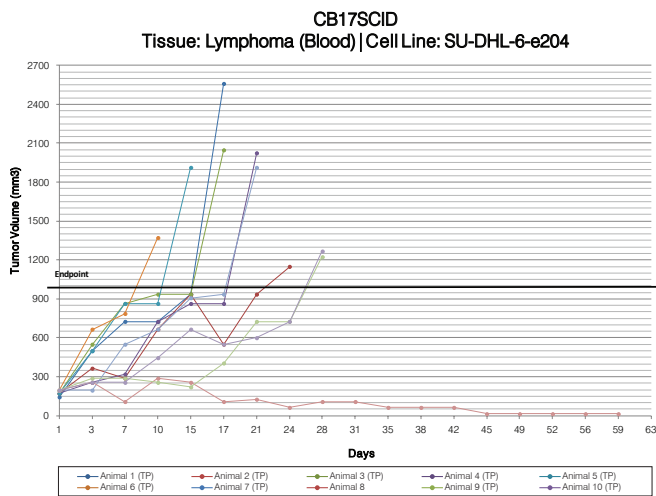
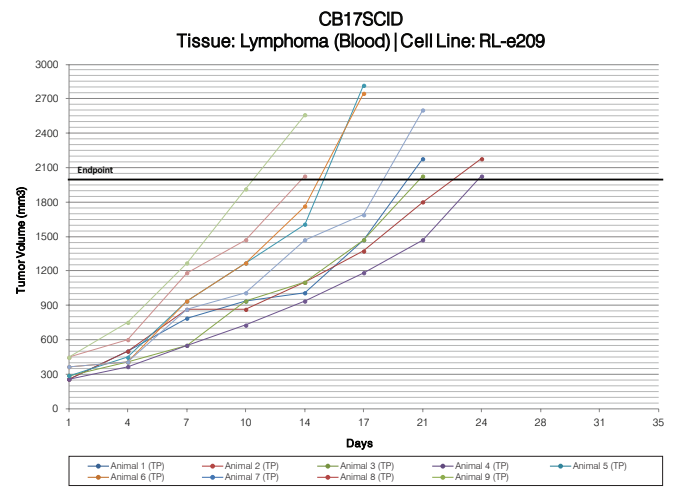
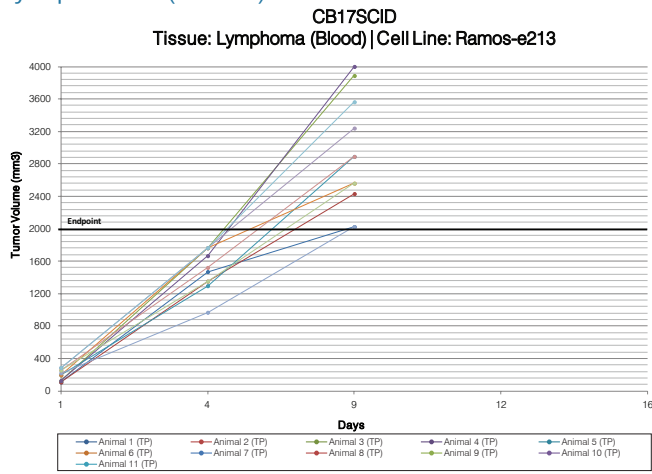
CB17SCID
Tissue: Lung | Cell Line: H929-e204



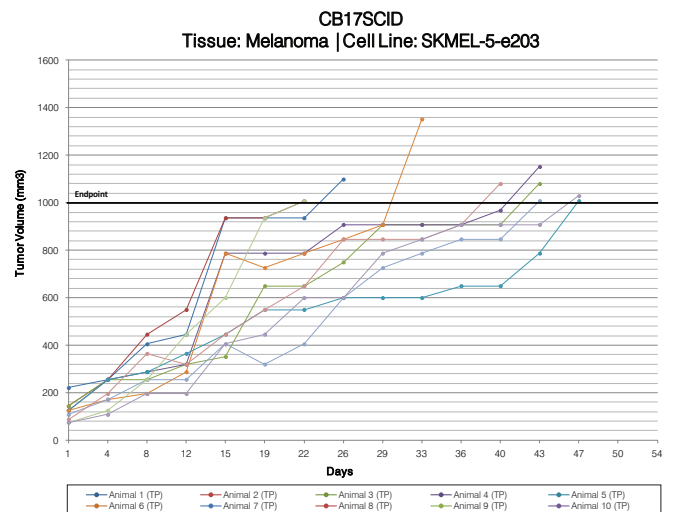
CB17SCID
Tissue: Lung | Cell Line: MSTO-211H-e202



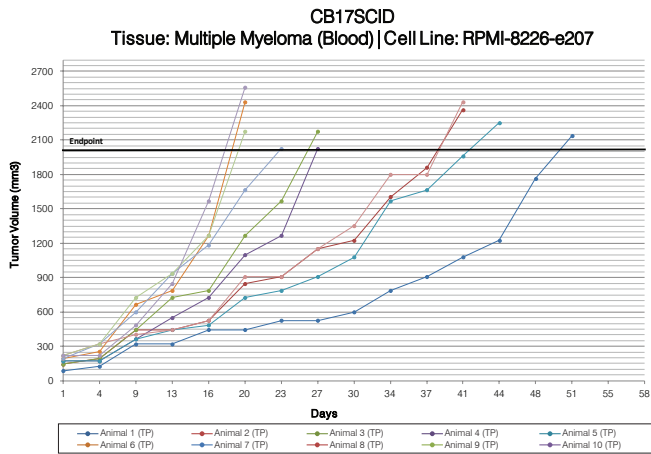
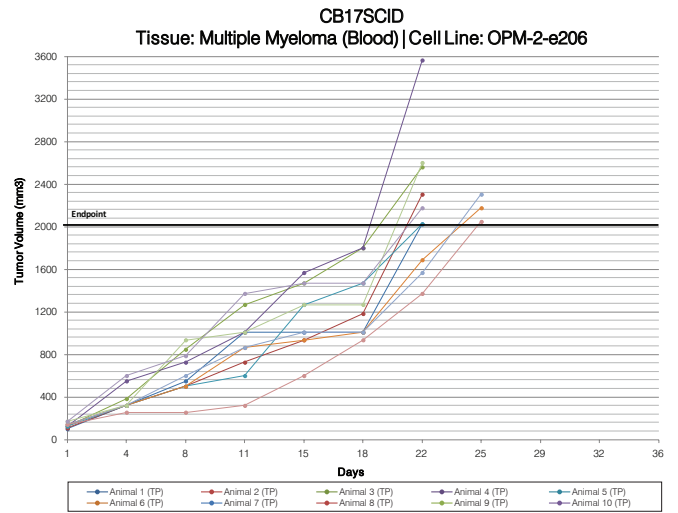
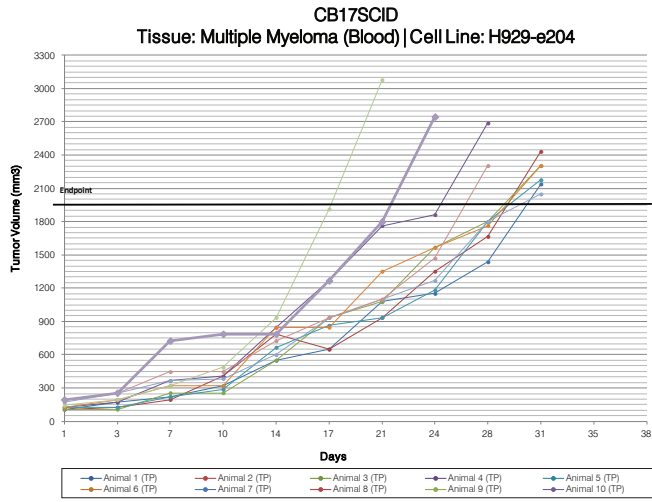
Lymphoma (Blood)



Melanoma

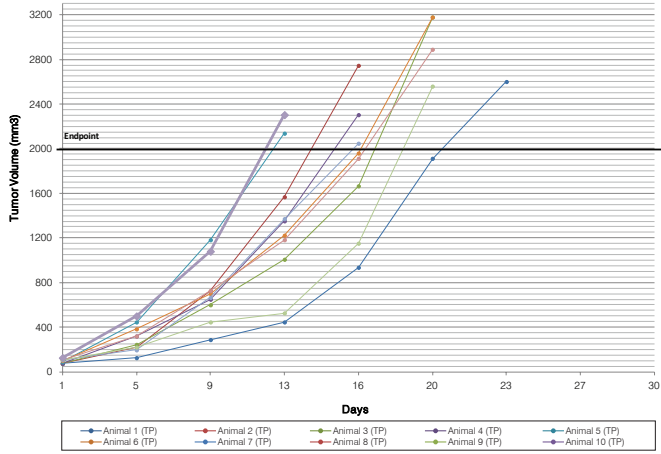


Multiple Myeloma (Blood)

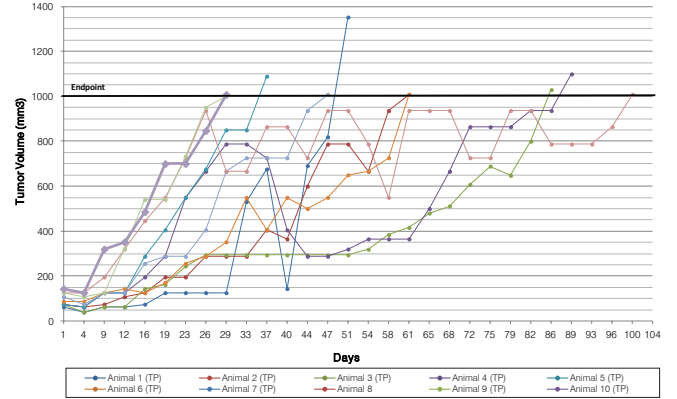


Ovarian

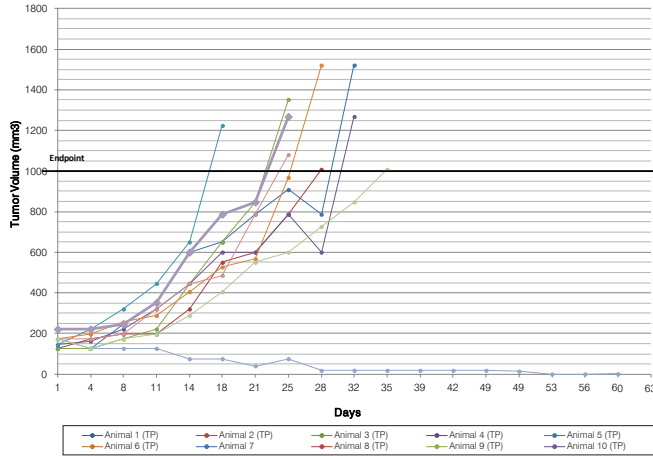
CB17SCID
Tissue: Ovarian | Cell Line: A2780-e307



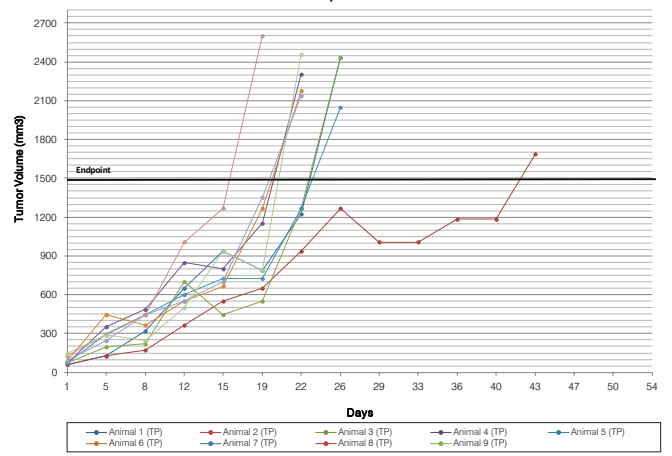
CB17SCID
Tissue: Ovarian | Cell Line: OVCAR3-e226



CB17SCID
Tissue: Ovarian | Cell Line: OVCAR5-e203

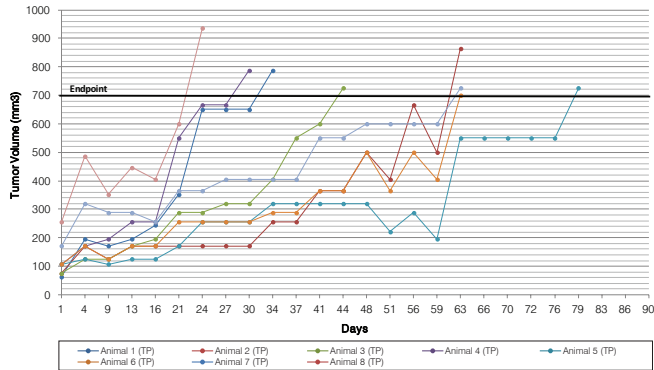


CB17SCID
Tissue: Ovarian | Cell Line: SKOV3-e206

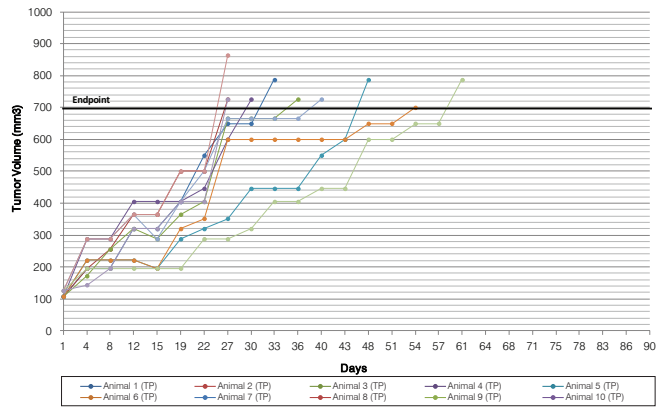


Pancreas

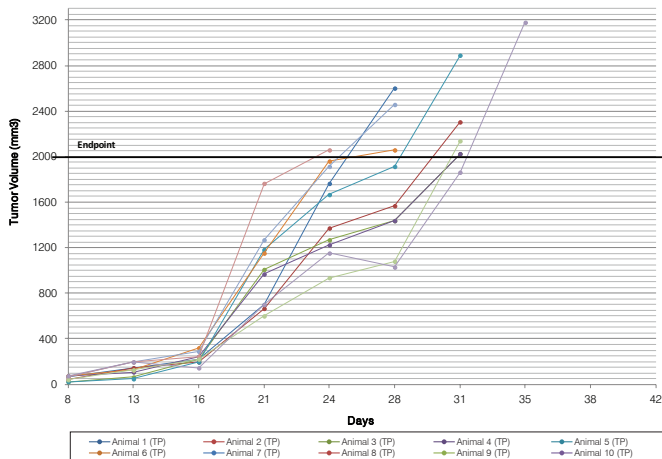
CB17SCID
Tissue: Pancreas | Cell Line: Capan-1-e204



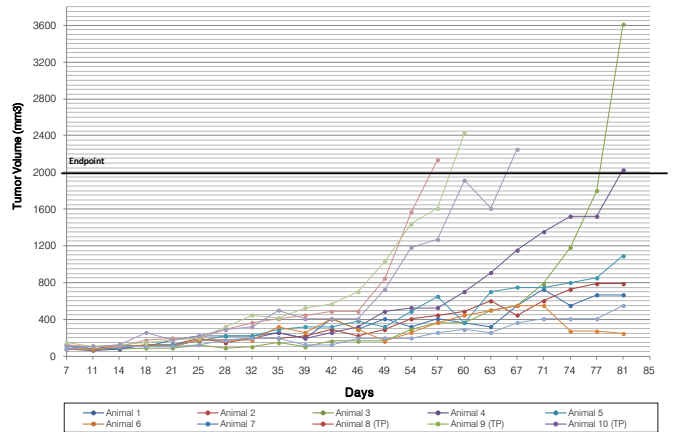
CB17SCID
Tissue: Pancreas | Cell Line: Capan-1-e205



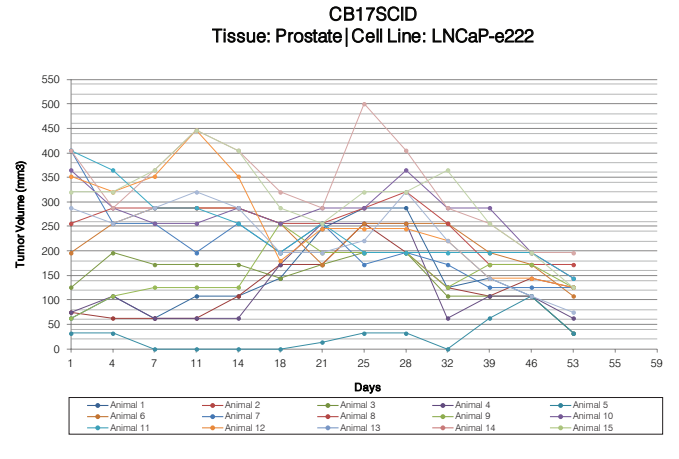
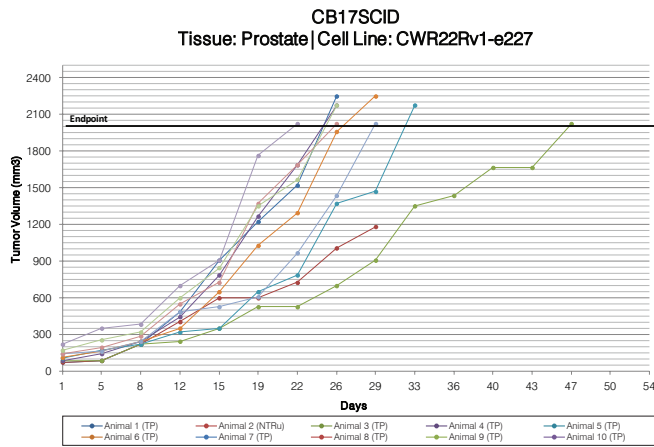
CB17SCID
Tissue: Pancreas | Cell Line: KP4-e200



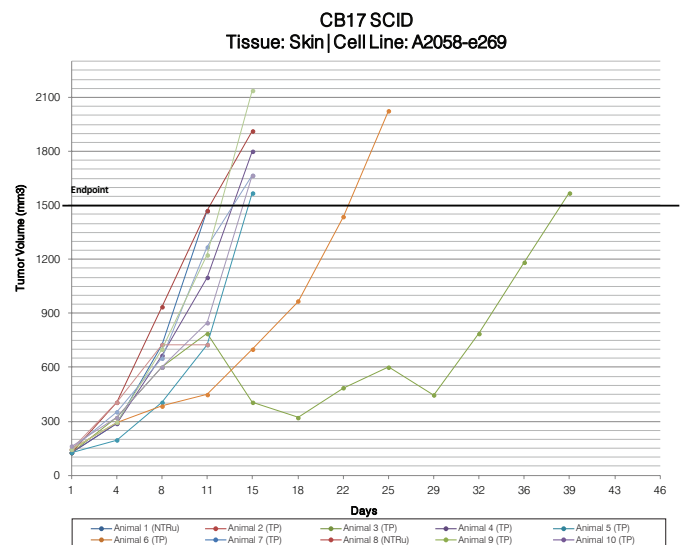
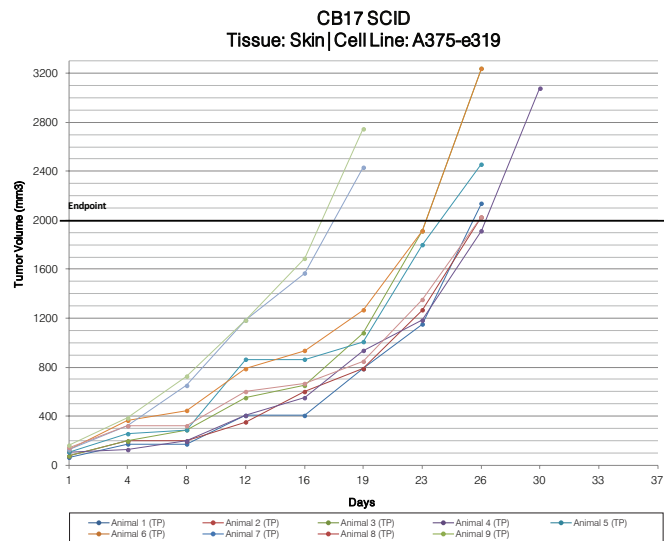
CB17SCID
Tissue: Pancreas | Cell Line: MiaPaCa-2-e276



Prostate

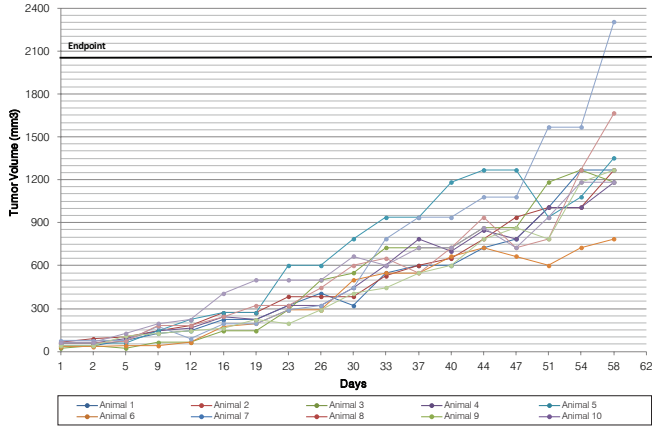


Skin

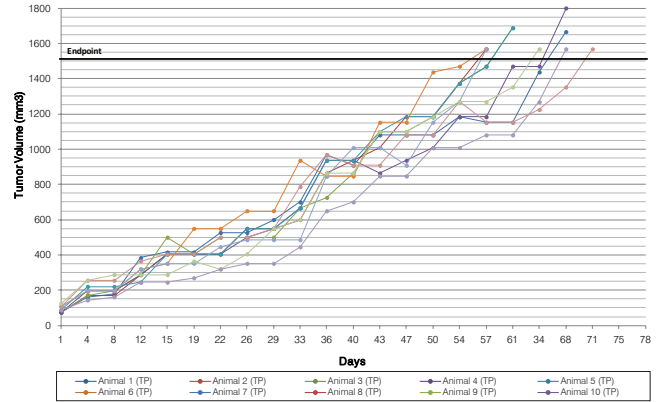


Stomach

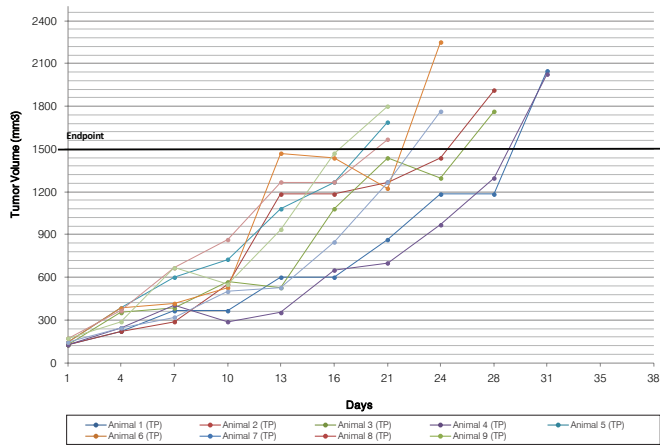
CB17 SCID
Tissue: Stomach | Cell Line: MKN-45-e201



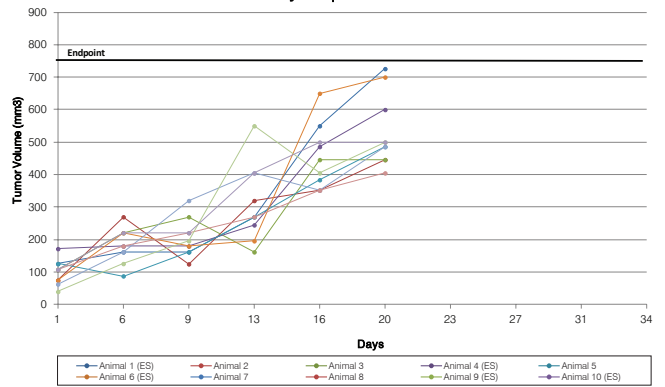
CB17 SCID
Tissue: Stomach | Cell Line: NCI-N87-e213



CB17 SCID
Tissue: Stomach | Cell Line: SNU5-e206



CB17 SCID
Tissue: Thyroid | Cell Line: 8505c-e203



Fox Chase SCID® Beige Mouse

Strain Code: 250

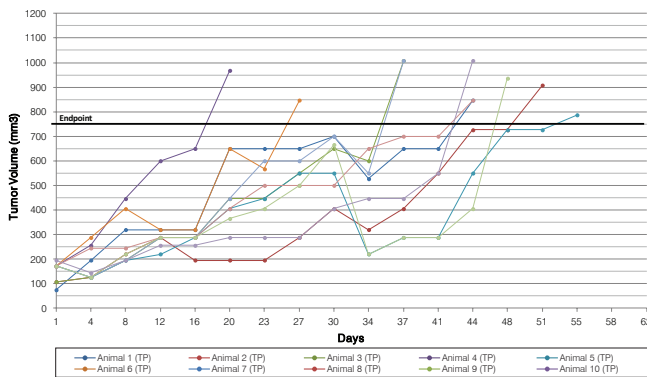
Nomenclature: CB17.Cg-Prkdc^{scid}Lyst^{bgj}/CrI

Origin: A congenic mouse that possesses both autosomal recessive mutations SCID (*Prkdc^{scid}*) and beige (*Lyst^{bgj}*). 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.

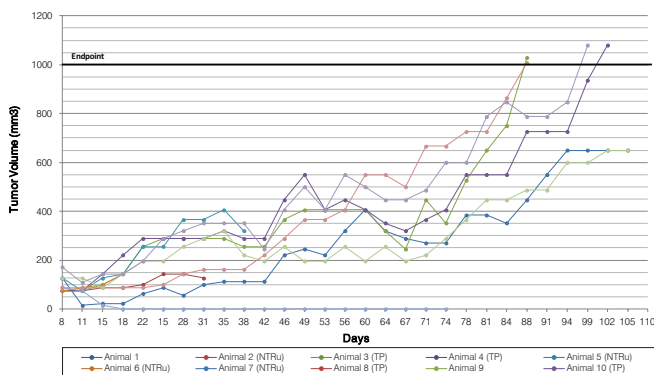


Breast

SCID BEIGE
Tissue: Breast | Cell Line: HCC1954-e203

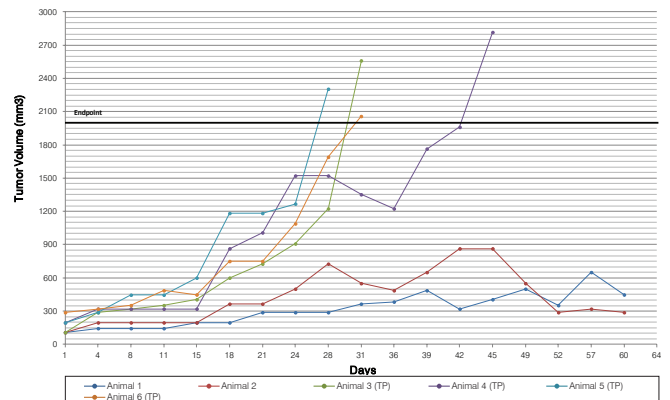


SCID BEIGE
Tissue: Breast | Cell Line: T-47D-e200



Leukemia (Blood)

SCID BEIGE
Tissue: Leukemia (Blood) | Cell Line: SET2-e202



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)		•	•
<i>Mycoplasma</i> (genus) (including <i>Acholeplasma laidlawii</i>)	•	•	•
<i>Mycoplasma pulmonis</i>	•	•	•
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	Human Essential	Human Comprehensive
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		•	•
<i>Mycoplasma</i> (genus) (including <i>Acholeplasma laidlawii</i>)	•	•	•
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