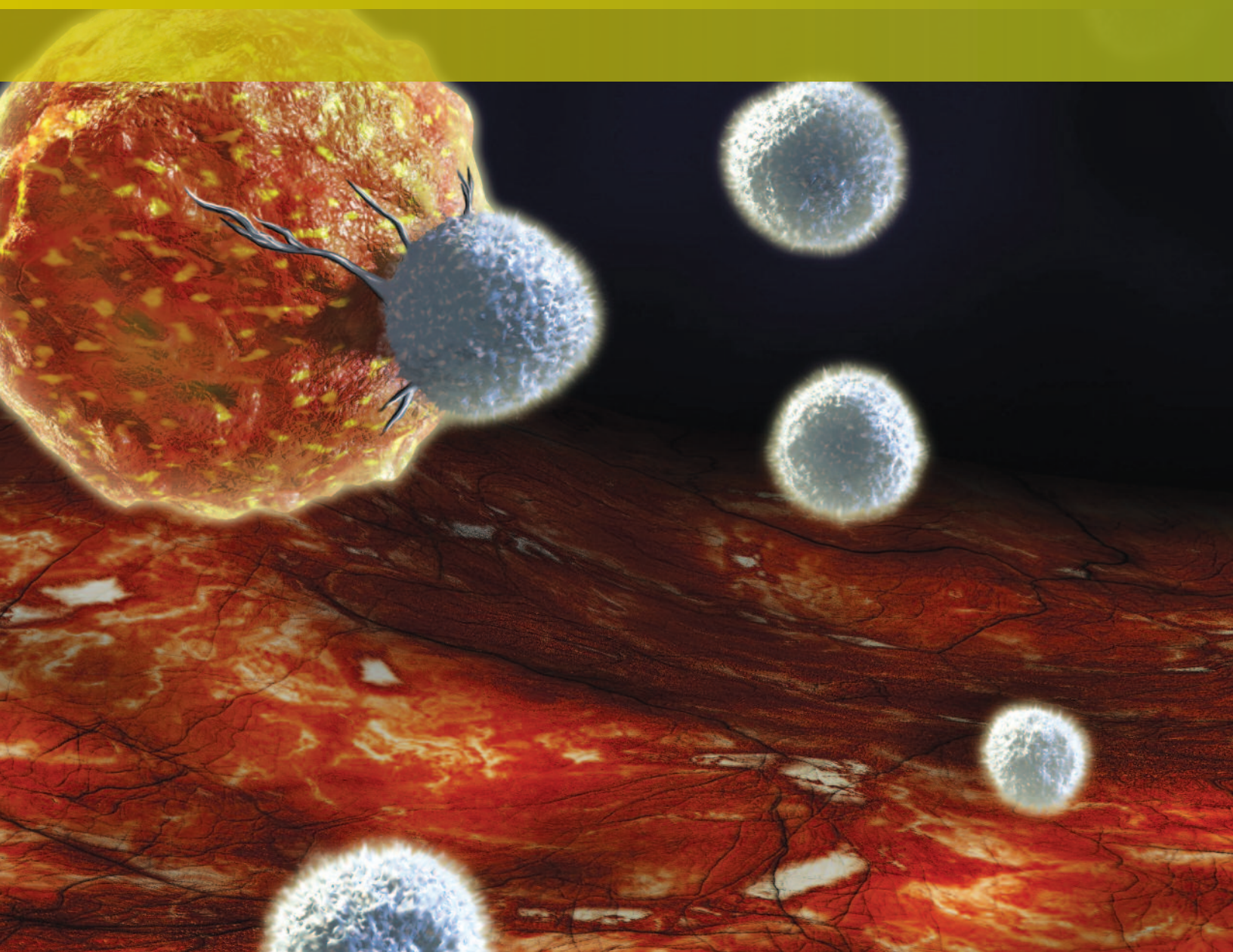




RESEARCH APPLICATIONS

Oncology Models and Services





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This brochure refers to several categories of models.

Taconic Transgenic Models™ (TTMs™) are important research tools offered off the shelf in typical study quantities. Each TTM™ carries a label license granting you the intellectual property right(s) to use the model in your research. By leveraging our TTM™ portfolio, you avoid the costly, time-consuming steps of finding, licensing and breeding the model you need. Taconic is the only commercial breeder that can supply genetically modified models with full licensing for use in your research. Taconic also offers services using these models.

Emerging Models: The Taconic Emerging Model Program includes distribution of investigator-sponsored models which are bred and distributed by Taconic, allowing their sponsors to share them more widely with other investigators. Since the individual sponsor sets the distribution requirements for each Emerging Model, you may be required to execute an MTA before ordering.

Taconic offers a comprehensive portfolio of translational rodent models to accelerate and improve your research. Many of these innovative animal models are exclusively available from Taconic.

Taconic's oncology portfolio

- Humanized immune system mice for tumor grafting and testing of therapeutics
- Spontaneous tumor models for breast and colon cancer
- The widest variety of immunodeficient mice available, including the super immunodeficient CIEA NOG mouse® and the HRN™ nude mouse
- Integrated model generation and breeding services to accelerate drug discovery timelines



This brochure presents abridged descriptions. For additional detailed technical information, please see the Taconic website at www.taconic.com.

Taconic



ORTHOTOPIC ALLOGRAFT COHORTS FROM TACONIC CANCER GEMs

Taconic provides access to a collection of fully licensed cancer models that resemble key features of human disease. Taconic has commercialized certain Netherlands Cancer Institute (NKI) cancer models (see page 9 for more details on the models).

■ Brca1-Associated Breast

Cancer Model: develops Brca1/p53 deficient breast cancer, resembling hormone receptor- and ERBB2-negative ("triple-negative") mammary carcinomas

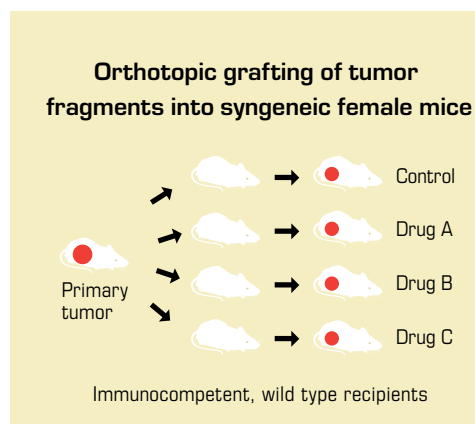
■ Invasive Lobular Breast

Cancer Model: develops E-cadherin/p53 deficient breast cancer, resembling invasive, lobular carcinomas

Why Brca1-Associated Breast Cancer Model is important?

- It closely resembles human disease and triple-negative breast cancer
- It is a conditional mouse mutant with somatic deletion of Brca1 and Trp53 targeted only to epithelial tissues
- The tumors show similar features compared to human tumors and respond to standard chemotherapy similar to patients
- The tumors develop drug resistance and relapse under standard chemotherapy regimen

Primary tumors from Brca1/p53 deficient mice can be used in an orthotopic allograft system for efficacy testing and preclinical evaluation of novel therapeutics. In collaboration with the Netherlands Cancer Institute, Taconic has established the generation of orthotopic allograft cohorts using tumors from the Brca1-Associated Breast Cancer Model.



- Tumor fragments are orthotopically transplanted into immunocompetent, wild type recipient mice
- Tumor grafting retains the impact of the immune system on treatment outcome (unlike studies in immunodeficient animals)
- Allows rapid generation of study cohorts with primary tumor materials (in contrast to immortalized cancer cell lines typically used for grafting studies)
- Permits parallel drug testing on genetically identical tumors

- Taconic can supply primary tumors from aged mice or expanded tumor material from tumor-grafted mice
- A repository of tumors is available. Tumor profiles include data on tumor histology, growth curves and response to standard therapy
- The Brca1/p53 tumor repository can be accessed for drug screening studies at your site or at your preferred CRO

Key publications describing Taconic's breast cancer models and their applications in drug screening

- Liu et al., 2007. PNAS 104: 12111-12116. Generation and initial description of the Brca1, p53 deficient mouse model
- Rottenberg et al., 2007. PNAS 104: 12117-12122. Therapeutic characterization of model and induction of chemotherapy resistance
- Rottenberg et al., 2008. PNAS 105: 17079-17084. Use of the model to identify novel treatment regimen and description of orthotopic allograft platform using wild type recipient mice
- Derksen et al. 2006. CANCER CELL 10, 437-449. Generation and initial description of the E-cadherin, p53 deficient mouse model



HUMANIZED IMMUNE SYSTEM MICE — PREDICTIVE TOOLS FOR TESTING NOVEL THERAPEUTICS

THE CIEA NOG mouse® — IMMUNODEFICIENT MICE CARRYING A RECONSTITUTED HUMAN IMMUNE SYSTEM

The super immunodeficient CIEA NOG mouse® is the best model known for engraftment of human cells, and therefore the model of choice for humanization experiments.

NOG mice reconstituted with a variety of human tissue sources represent critical tools for basic research into the human immune system. Humanized NOG mice enable efficacy testing of immunotherapies as well as the unprecedented ability to study tumor specific modulation of the immune system. Taconic offers study ready cohorts of hematopoietic stem cell-engrafted NOG mice.

Taconic offers access to a large pool of scientific expertise on use of the CIEA NOG mouse® for engraftment and reconstitution with human tissues.

How can humanized NOG mice be used?

Humanized mouse models are refined tools to study the effect of human immune cells in preclinical oncology:

- Assessment of therapeutic immunomodulatory activities
- Evaluation of antitumor activity related to antibody dependent cell cytotoxicity (ADCC)
- Study of hematopoiesis
- Analysis of innate and adaptive immunity
- Cytokine readouts

Humanized mouse models are excellent tools for other research application, such as:



- GvHD (Graft versus Host Disease)
- T cell activation model
- B cell depletion studies
- Autoimmune disease
- Allergy
- Inflammation
- Infectious disease (HIV)
- Vaccine development
- Transplantation
- Toxicology

Taconic offers three humanized immune system models:

huPBMC-NOG

NOG mice engrafted with human PBMCs (peripheral blood mononuclear cells)

- Model for investigation of adult/mature cell populations
- Use is limited to short term studies
- GvHD response can be used as a screening system for T cell modulating drugs
- Available with normal or patient-derived PBMCs

huNOG

NOG mice engrafted with human CD34+ hematopoietic stem cells (HSCs)

- Stable engraftment of multiple cell lineages by 12-16 weeks post-injection
- Only mice with ≥25% hCD45+ in peripheral blood are delivered
- Long term studies possible

huNOG are available off the shelf! Place your order now for immediate delivery.

BLT-NOG

NOG mice injected with CD34+ hematopoietic stem cells (HSCs) and surgically engrafted with donor matched fetal thymus and liver sections

- Stable engraftment of multiple cell lineages, with enhanced T and B cell function
- Particularly suited to vaccine studies, antibody generation studies and the development of helper T cell and B cell responses.

Licensing: No MTA or license fee is required.



IMMUNODEFICIENT MODELS

NUDES

The autosomal recessive nude gene in homozygous (nu/nu) mice causes the lack of fur and an abnormal thymus. Heterozygous (nu/+) animals carry the recessive nude gene on one chromosome only and therefore have a normal thymus triggered immune system

B6 nude

T CELL DEFICIENT MOUSE

Nomenclature: B6.Cg/NTac-*Foxn1*^{nu} NE10

- *Foxn1*^{nu} mutation backcrossed to the C57BL/6NTac inbred strain for ten generations

Model Number	Zyosity
B6NU	Heterozygous or Homozygous

BALB/c nude

T CELL DEFICIENT MOUSE

Nomenclature: C.Cg/AnNTac-*Foxn1*^{nu} NE9

- *Foxn1*^{nu} mutation backcrossed to the BALB/cAnN inbred strain for nine generations
- Available at two health designations: Defined Flora from gnotobiotic isolators and Restricted Flora™ from Isolated Barrier Units™

Model Number	Zyosity
BALBNU	Heterozygous or Homozygous



NCr nude

T CELL DEFICIENT MOUSE

Nomenclature: CrTac:NCr-*Foxn1*^{nu}

- Outbred background originated from an accidental cross between the BALB/c inbred nude and NIH(S) outbred nude mice
- The standard athymic model for National Cancer Institute (NCI) studies as well as many pharmaceutical and institutional oncology screening programs

Model Number	Zyosity
NCRNU	Heterozygous or Homozygous

NIH nude

T CELL DEFICIENT RAT

Nomenclature: NTac:NIH-*W^{hn}*

- In this outbred immunodeficient model the vibrissae are present in the homozygous nude rat but bent, with some short hairs on the head and occasionally on the rest of the body
- Good xenograft host for many cell lines

Model Number	Zyosity
NIHRNU	Heterozygous or Homozygous

NMRI nude

T CELL DEFICIENT MOUSE

Nomenclature: BomTac:NMRI-*Foxn1*^{nu}

- *Foxn1*^{nu} mutation backcrossed to the NMRI outbred stock

Model Number	Zyosity
NMRINU	Heterozygous or Homozygous

Swiss nude

T CELL DEFICIENT MOUSE

Nomenclature: NTac:NIHS-*Foxn1*^{nu}

- *Foxn1*^{nu} mutation on an outbred background, originating from the NIH Genetic Repository

Model Number	Zyosity
NSWNU	Heterozygous or Homozygous

HRN™ nude

T CELL DEFICIENT MOUSE

EMERGING MODEL

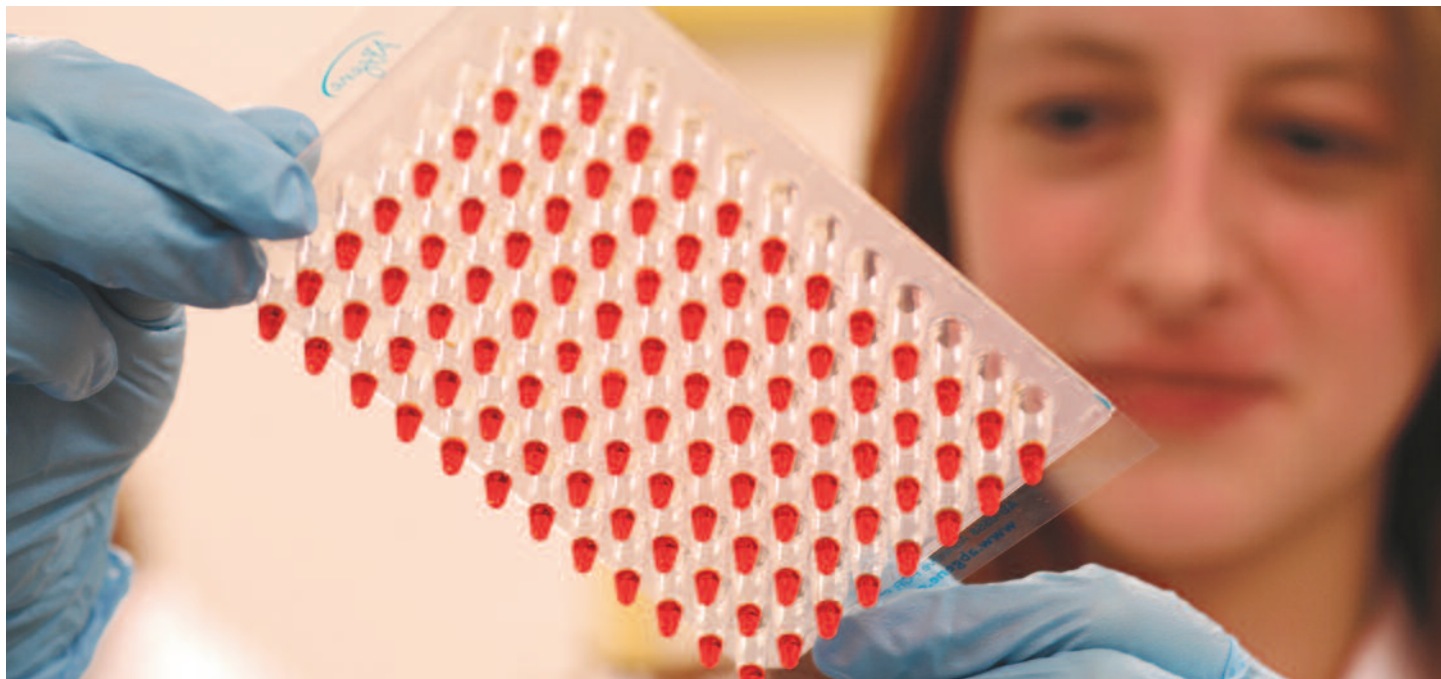
Nomenclature: CrTac:NCr-*Por^{tm1Wolf}*
Foxn1^{nu} Tg(Alb-cre)21Mgn

- The combination of the nude mutation and the HRN™ mutations permits xenograft studies in a mouse without liver P450 metabolism
- Useful when studying highly cleared therapeutics, allowing efficacy testing without the need for multiple dosing or the use of constant infusion pumps
- Use to get a quick readout on the efficacy of your anticancer lead compounds without first working through PK issues
- A combination between Taconic's leading outbred nude, the NCr nude, and the HRN™ transgenic mouse

Model Number	Zyosity
9066	Homozygous Floxed/ Homozygous/Carrier (tissue specific conditional knockout)



IMMUNODEFICIENT MODELS



SCIDS

Mice homozygous for the *Prkdc*^{scid} mutation lack both T and B cells due to a defect in V(D)J recombination. Therefore, they easily accept foreign tissue transplants, including human tumors, making them effective models for testing new cancer treatments and as hosts for human immune system tissues (i.e., SCID-hu).

C.B-17 scid

T & B CELL DEFICIENT MOUSE

Nomenclature: C.B-*Igh*-1^b/IcrTac-*Prkdc*^{scid}

- This is the original congenic background strain on which Dr. Mel Bosma discovered the spontaneous scid mutation
- Available at two health designations: Defined Flora from gnotobiotic isolators and Restricted Flora™ from Isolated Barrier Units™

Model Number	Zygoty
CB17SC	Homozygous

ICR scid

T & B CELL DEFICIENT MOUSE

Nomenclature: IcrTac:ICR-*Prkdc*^{scid}

- Equivalent to the C.B-17 scid in severity of immunodeficiency, but this outbred background exhibits a significantly reduced incidence of spontaneous Ig production (leakiness)

Model Number	Zygoty
ICRSC	Homozygous

NOD scid

T & B CELL DEFICIENT MOUSE

Nomenclature: NOD/MrkBomTac-*Prkdc*^{scid}

- The scid mutation has been transferred onto a diabetes-susceptible Non-Obese Diabetic background, making it a good model for diabetes and obesity research for Insulin-Dependent Diabetes Mellitus, Type I diabetes
- The multiple defects in immunity unique to this model provides a very good system for reconstitution with human hematopoietic cells, resulting in excellent models for HIV-1 research and gene therapy
- Useful model for cancer research into increased tumor incidence, particularly lymphomas and thymic tumors
- Does not develop spontaneous diabetes

Model Number	Zygoty
NODSC	Homozygous



IMMUNODEFICIENT MODELS

RAG2

Mice homozygous for the *Rag2^{tm1Fwa}* null mutation exhibit total inability to initiate V(D)J rearrangement and fail to generate mature T or B lymphocytes. Otherwise, the Rag2 mouse has apparently normal hematopoiesis. Rag2 knockouts are useful for vaccine development, transplantation or xenograft studies and hematopoiesis research. Through blastocyst complementation assays, the Rag2 can be useful in evaluating the function of specific genes in the differentiation of lymphocytes.



Rag2 (129S6)

T & B CELL DEFICIENT MOUSE

TACONIC TRANSGENIC MODEL™

Nomenclature: 129S6/SvEvTac-*Rag2^{tm1Fwa}*

- The 129S6 strain was the original strain in which the Rag2 targeted mutation was created

Model Number	Zygosity
RAG2	Homozygous

Rag2 (BALB/c)

T & B CELL DEFICIENT MOUSE

TACONIC TRANSGENIC MODEL™

Nomenclature: C.129S6(B6)-

Rag2^{tm1Fwa} N12

- Backcrossed twelve generations (N12) to the BALB/cAnNTac inbred strain

Model Number	Zygosity
601	Homozygous

Rag2 (B6.SJL)

T & B CELL DEFICIENT MOUSE

TACONIC TRANSGENIC MODEL™

Nomenclature: B6.SJL(129S6)-

Ptprc^a/BoyCrTac-Rag2^{tm1Fwa} N10

- Similar to C57BL/6 with the H2^b haplotype but carries the *Ptprc^a* and *Pep3^b* genes from the SJL strain.

Model Number	Zygosity
461	Homozygous

Rag2 (C57BL/6)

T & B CELL DEFICIENT MOUSE

TACONIC TRANSGENIC MODEL™

Nomenclature: B6.129S6-*Rag2^{tm1Fwa}* N12

- Backcrossed twelve generations (N12) to the C57BL/6NTac inbred strain

Model Number	Zygosity
RAGN12	Homozygous

MODELS

WITH MULTIPLE IMMUNODEFICIENCIES

Scid-beige

T, B & NK CELL DEFICIENT MOUSE

Nomenclature: C.B-*Igh-1^b/GbmsTac-*

Prkdc^{scid} Lyst^{bg} N7

- The mutations were backcrossed seven generations to the congenic C.B-17 background
- This double mutant model carries the scid mutation which causes a lack of both T and B lymphocytes due to a defect in V(D)J recombination
- It also carries the beige mutation which results in cytotoxic T cell and macrophage defects as well as selective impairment of NK cell functions

Model Number	Zygosity
CBSCBG	Homozygous/Homozygous





IMMUNODEFICIENT MODELS

Rag2/Il2rg Double Knockout Mouse

T, B & NK CELL DEFICIENT

EMERGING MODEL

Nomenclature: B10.B6-Rag2^{tm1Fwa} Il2rg^{tm1Wjl}

- Useful for transplanting allogeneic or xenogeneic stem cells, which are often rejected by NK cells
- May be used in combination with parent Rag2 knockout model for defining the role of NK cells in host resistance to tumors and infectious agents
- May not be the best choice for experiments involving humanization of the immune system; human hematopoietic stem cells do not engraft and differentiate well in strains on B6 or B6-related backgrounds
- The *Il2rg* gene is located on the X chromosome, so male knockouts are hemizygous for the *Il2rg* mutant allele
- MTA required
- Sponsored by the National Institute of Allergy and Infectious Diseases (NIAID)

Model Number	Zygoty
4111	Homozygous/Homozygous (Females) or Homozygous/Hemizygous (Males)

CIEA BRG mouse

T, B & NK CELL DEFICIENT

EMERGING MODEL

Nomenclature: C.Cg-Rag2^{tm1Fwa} Il2rg^{tm1Sug}/JicTac

- Higher radiation tolerance due to Rag2 mutation compared to scid models (similar to wild type mice)

- Model is completely congenic on BALB/c background, the preferred strain background for many immunology studies
- Applications in studies on humanization, infectious diseases and autoimmune diseases as well as cancer xenografts
- Sponsored by the Central Institute for Experimental Animals and In-Vivo Science International

Model Number	Zygoty
11503	Homozygous/Homozygous (Females) or Homozygous/Hemizygous (Males)

CIEA NOG mouse®

T, B & NK CELL DEFICIENT

EMERGING MODEL

Nomenclature: NOD.Cg-Prkdc^{scid} Il2rg^{tm1Sug}/JicTac

- The CIEA NOG mouse® is a super immune deficient mouse with unparalleled potential to engraft human cells and tissues
- This severely immunocompromised mouse carries the scid mutation and a targeted mutation of the *Il2rg* gene on the NOD/ShiJic genetic background.
- The functional knockout of the *Il2rg* chain results in reduction of residual innate immunity of the NOD/ShiJic background and superior engraftment of human cells and tissues compared to any other immune deficient model.
- Lack of mature T, B and NK cells, reduced complement activity, dysfunctional macrophages and dendritic cells and deficiencies in immune signaling, including impaired cytokine production

- Excellent choice for xenograft studies using cell lines with poor take rates in nudes or scids or for engraftment of patient derived tumors
- The best choice for humanized immune system mice, with successful engraftment of various tissues such as PBMCs or umbilical cord blood
- Combine humanization of the immune system with xenograft of tumor cell lines or patient derived tumors in order to test therapeutic antibodies and immune-modulating treatments
- Displays a very low incidence of lymphoma, unlike NOD scid model
- The *Il2rg* gene is X-linked, so male knockouts are hemizygous for the *Il2rg* mutant allele
- Sponsored by the Central Institute for Experimental Animals and In-Vivo Science International

Model Number	Zygoty
NOG	Homozygous/Homozygous (Females) or Homozygous/Hemizygous (Males)





SPONTANEOUS TUMOR MODELS

Brca1-Associated Breast Cancer Model

BREAST CANCER MODEL

EMERGING MODEL

Nomenclature: STOCK *Trp53*^{tm1Bm}
Brca1^{tm1Bm} Tg(KRT14-cre)8Brn

- Conditional mouse mutant with somatic deletion of *Brca1* and *Trp53* in several epithelial tissues including mammary epithelium. Female mice of this strain show a high incidence of mammary tumors that mimic many aspects of human BRCA1-mutated basal-like breast cancer
- Contains conditional disruptions of the *Brca1* gene, germline mutations of which are responsible for 40% to 50% of hereditary breast cancers, and the *Trp53* tumor suppressor gene, the most commonly mutated gene in human cancers
- Literature references report that 80% of females develop multiple mammary and skin epithelial tumors with onset between 140 and 280 days
- This model may be helpful in predicting responses of human BRCA1-deficient tumors to therapies
- Can be used to supply tumor tissues for allografts
- 20-30% of mice will develop non-mammary epithelial tumors

Model Number	Zygoty
11510	Homozygous Floxed/ Homozygous Floxed/Carrier (Tissue specific conditional knock out)

Floxed Ink4a/Arf Mouse

EMERGING MODEL

Nomenclature: B6.129P2-*Cdkn2a*^{tm2Bm}/A

- Contains a targeted mutation of *Cdkn2a* (Ink4a/Arf) which introduced LoxP sites upstream of exon 2 and downstream of exon 3
- Cross with the tissue-specific cre of your choice to develop a tumor model
- The cell cycle inhibitory protein Cdkn2a is frequently disrupted in various types of human cancer, and germline mutations of this locus can confer susceptibility to melanoma and other tumors
- After deletion of the gene via crossing to a tissue-specific cre line, mice can develop tumors, giving rise to various sarcomas, carcinomas, lymphomas and metastatic melanoma

Model Number	Zygoty
11511	Homozygous Floxed

Floxed p53 Mouse

EMERGING MODEL

Nomenclature: B6.129P2-*Trp53*^{tm1Bm}/A

- Contains a targeted mutation of *Trp53* which introduced LoxP sites flanking exons 2 through 10
- Cross with the tissue-specific cre of your choice to generate a conditional disruption of the *Trp53* tumor suppressor gene, the most commonly mutated gene in human cancers
- Useful for studying *Trp53* gene function or screening potential cancer intervention therapies
- Conditional mutation avoids the predominance of non-epithelial tumors observed in constitutive *Trp53* knockouts

- After deletion of the gene via crossing to a tissue-specific cre line, the incidence and the spectrum of tumors observed in homozygous or heterozygous mutant animals were comparable to those found in constitutive knockouts

Model Number	Zygoty
11512	Homozygous Floxed

Invasive Lobular Breast Cancer Model

BREAST CANCER MODEL

EMERGING MODEL

Nomenclature: FVB.Cg-*Cdh1*^{tm1Jjan}
Trp53^{tm1Bm} Tg(KRT14-cre)8Brn/A

- Tissue-specific conditional knockout of *Cdh1* (E-cadherin) and *Trp53* in mice induces metastatic mammary carcinomas that resemble human invasive lobular carcinoma (ILC), the second most common type of primary breast cancer
- Literature references report that females develop multiple skin and mammary tumors with a median latency of 214 days
- This mouse model provides a valuable tool to gain insights into the role of E-cadherin loss of function in mammary tumor initiation, progression, and metastasis
- Can be used to supply tumor tissues for allografts
- 20-30% of mice will develop non-mammary epithelial tumors

Model Number	Zygoty
11509	Homozygous Floxed/ Homozygous Floxed/Carrier (Tissue specific conditional knock out)



SPONTANEOUS TUMOR MODELS



Pirc

COLON CANCER MODEL

TACONIC TRANSGENIC MODEL™ — CRYOPRESERVED

Nomenclature: F344/NTac-*Apc*^{am1137}

- Excellent model for study of human familial colon cancer
- ENU-induced point mutation results in a truncating mutation in the *Apc* gene at a site corresponding to the human mutation hotspot region of the gene
- Heterozygotes develop multiple tumors in the small intestine and colon by 2-4 months of age
- Pirc tumors closely resemble those in humans in terms of histopathology and morphology as well as distribution between intestine and colon

- Longer lifespan compared to related mouse models (12-15 months)
- Tumors may be visualized by CT, endoscopy or dissection
- Available for immediate cryorecovery

Model Number	Zygosity
PIRC	Heterozygous or Wild Type

Stat1

TACONIC TRANSGENIC MODEL™

Nomenclature: 129S6/SvEv-*Stat1*^{tm1Rds}

- Contains a homozygous disruption of the *Stat1* gene and complete lack of functional STAT1 proteins
- The JAK-STAT signaling pathway has been implicated in mediating biologic responses induced by many cytokines
- Deficient immune cell response to alpha and gamma interferons

- Accelerated and amplified development of chemically-induced and spontaneous tumors
- Useful in determining the role of a variety of cytokines in immune responses, the role of STAT1 protein in mediating interferon-dependent responses, and the roles of tumor cells and immune cells in mediating tumor cell destruction

Model Number	Zygosity
2045	Homozygous

TSG-p53®

TACONIC TRANSGENIC MODEL™

Nomenclature: B6.129-*Trp53*^{tm1Brd} N12

- Contains a disruption of the *Trp53* tumor suppressor gene, the most commonly mutated gene in human cancers
- Useful for studying *Trp53* gene function or screening potential cancer intervention therapies
- Homozygous TSG-p53® mice are totally deficient in p53 protein and prone to the development of spontaneous tumors, primarily lymphomas and sarcomas
- Heterozygous TSG-p53® mice carry one normal p53 allele and have a much lower rate of spontaneous tumor development

Model Number	Zygosity
P53N12	Homozygous or Heterozygous



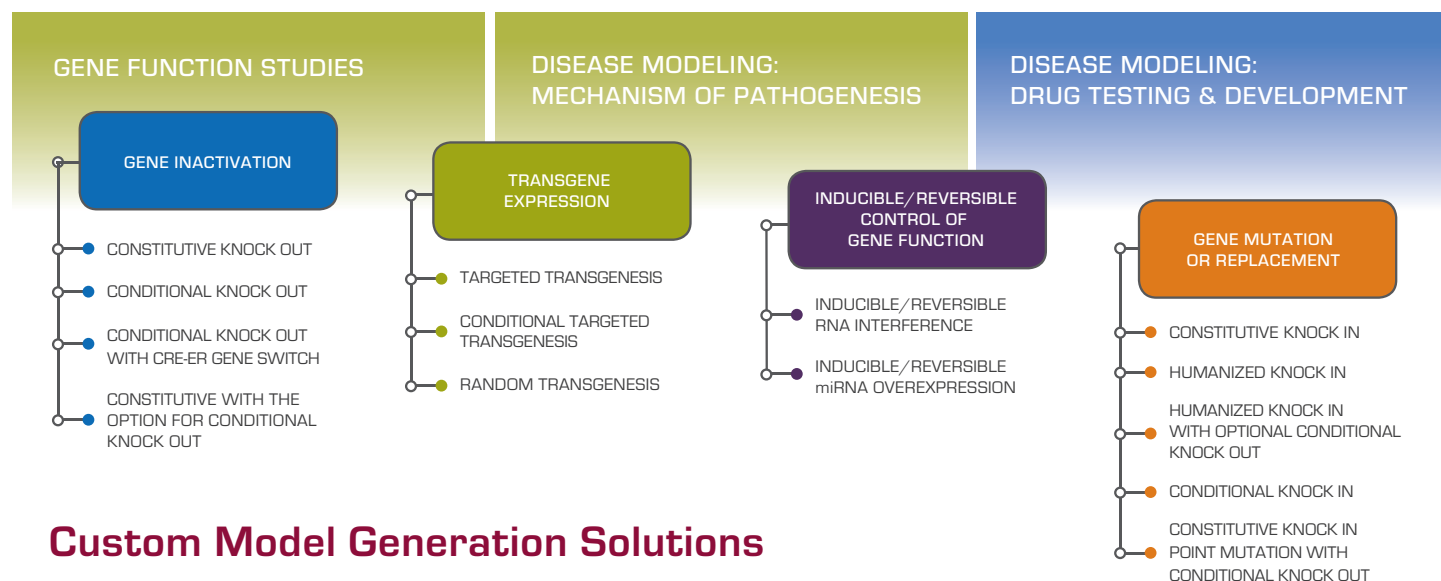
COMPARISON TABLE OF IMMUNODEFICIENT MOUSE AND RAT MODELS

MODEL NAME (NUMBER)	COAT COLOR	HEALTH STATUS	T CELL DEFICIENT	B CELL DEFICIENT	NK CELL DEFICIENT	OTHER IMMUNODEFICIENCIES
Swiss nude mouse (NSWNU)	Albino nude	Defined Flora	X			
BALB/c nude mouse (BALBNU)	Albino nude	Defined Flora & Restricted Flora™	X			
B6 nude mouse (B6NU)	Black nude	Restricted Flora™	X			
NCR nude mouse (NCRNU)	Albino nude	Restricted Flora™	X			
NMRI nude mouse (NMRINU)	Albino nude	Restricted Flora™	X			
NIH nude rat (NIHRNU)	Black nude, black & white nude, albino nude	Restricted Flora™	X			
HRN™ nude mouse (9066)*	Albino nude	Restricted Flora™	X			
C.B-17 scid mouse (CB17SC)	Albino	Defined Flora & Restricted Flora™	X	X		
ICR scid mouse (ICRSC)	Albino	Restricted Flora™	X	X		
NOD scid mouse (NODSC)	Albino	Restricted Flora™	X	X	Shows reduced NK function	Dysfunctional antigen presenting cells (e.g. dendritic cells and macrophages).
Rag2 (129S6) mouse (RAG2)	White-bellied agouti	Restricted Flora™	X	X		
Rag2 (B6.SJL) mouse (461)	Black	Murine Pathogen Free™	X	X		
Rag2 (BALB/c) mouse (601)	Albino	Murine Pathogen Free™	X	X		
Rag2 (C57BL/6) mouse (RAGN12)	Black	Murine Pathogen Free™	X	X		
Scid-beige mouse (CBSCBG)	Albino	Defined Flora	X	X	X	
Rag2/Il2rg Double Knockout Mouse (4111)	Black	Murine Pathogen Free™	X	X	X	
CIEA BRG mouse (11503)	Albino	Restricted Flora™	X	X	X	Dysfunctional antigen presenting cells (e.g. dendritic cells and macrophages).
CIEA NOG mouse® (NOG)	Albino	Defined Flora & Restricted Flora™	X	X	X	Reduced complement activity, dysfunctional macrophages and dendritic cells, deficiencies in immune signaling, including cytokine production. The most immune deficient mouse available.

* Lacks P450 activity in liver



INTEGRATED CUSTOM MODEL GENERATION AND BREEDING SOLUTIONS



Custom Model Generation Solutions

Taconic offers a suite of project management services to drive new oncology model development forward with industry leading quality and speed.

CUSTOM MODEL GENERATION SOLUTIONS

Taconic's Custom Model Generation Solutions empower our clients to develop research models specifically suited to the unique needs of their discovery studies or therapeutic programs. As a market leader with decades of experience in custom model generation, Taconic partners with clients to design, develop, and breed high-quality genetically engineered mouse and rat models.

CUSTOM BREEDING SOLUTIONS

Take advantage of Taconic's fully integrated custom breeding solutions to bring innovative oncology models from design to study ready cohorts with unprecedented speed and transparency. Combine our

portfolio of spontaneous and conditional tumor models with your existing or newly generated lines to explore new frontiers in oncology research. Taconic's PhD-led teams are trained in project management principles to balance speed, cost, and quality in order to deliver your customized project aims. Custom Breeding Solutions coordinates flexible tools and advanced technologies to achieve your project goals, including:

- Embryology
- Animal housing
- Molecular analysis
- Surgery and specimen collection
- Shipping animals with choice of animal identification system pre-applied



Call Taconic Customer Service to schedule a discussion with a Taconic scientist.

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www.taconic.com



Taconic
Smart Solutions To Improve Human Health