Research Models and Services

2023 Catalog

charles river

Introducing the SRG

A first-in-class, highly immunocompromised rat model.

Rev. 6.2023

The SRG Rat

A first-in-class, highly immunocompromised rat model.

Charles River is pleased to be including the SRG rat as part of our 2023 catalog. The SRG rat model is designed for studying cancer, infectious diseases, human tissue transplantation, and cellular therapies.

Unlike other immunodeficient rodent strains, such as the nude rat, the SRG (Sprague Dawley, Rag2, Il2rg- "SRG") is a severely immunodeficient model created through knockout mutations in the *Rag2* and *Il2rgamma* genes that result in mature B, T, and NK cell deficiencies. This severe immunodeficiency, combined with its larger organism size, makes the SRG rat an ideal alternative research model to mice in certain preclinical applications, especially for cancer research.

Benefits of the SRG Rat for Preclinical Oncology Research

- Severe immunodeficiency ensures high engraftment rates of a variety of human tissues and tumors
- Larger organism size allows larger tumor burden and reduces difficulty in procedures such as catheterization and blood collection
- Larger tumor sizes (up to 10x larger compared to mice) allow for serial tissue sampling throughout the treatment routine (robust analysis upon harvest)

For pricing, see page 18 of our catalog or visit our website for further information.

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Contact Us

Our teams are available Monday through Friday to field any questions you may have, or to direct inquiries to the correct contact or department. For all correspondence: Charles River Laboratories, 251 Ballardvale St., Wilmington, MA 01887

Technical Assistance

Phone: 1.800.338.9680
Email: TAD@crl.com

Our expert technical group, including our highly qualified professional staff of veterinarians and doctorate-level scientists, can assist you in areas such as laboratory animal science, biology, husbandry, surgery, and health issues.

Specifically, we can assist you with:

- Information regarding the Charles River portfolio
- Performing literature searches
- Answering questions about specific animal models

Research Models Customer Service Department

Phone: 1.800.LAB.RATS (1.800.522.7287)
Email: ResearchModels@crl.com
Web: criver.com/ResearchModels

Our customer service representatives strive to make the research model order and shipment process as easy as possible for you. We offer three ways for you to order research models: phone, online ordering, and email.

Specifically, we can assist you with:

- Animal orders
- Model availability
- Pricing and shipping details
- Preconditioning Services

NCI Grantee Orders

Phone: 1.800.LAB.RATS (1.800.522.7287)
Email: granteeorders@crl.com

NCI grantees can take advantage of our NCI Grantee Program. Please see models in the NCI Grantee Models section. In order to receive NCI pricing when ordering, you must inform us that you are a grantee. We may request that you provide additional grant information to confirm your order.

Laboratory Services Client Relations/Laboratory Testing Management® (LTM™) Support Team

Phone: 1.800.338.9680
Phone: 1.781.222.6701
Email: LabServices@crl.com

The Laboratory Services Client Relations team is your resource for health and genetic testing, including the use of LTM™, our online, interactive order entry and results management system that centralizes your health and genetic testing programs into one virtual location. For more information on LTM™, visit criver.com/ltm.

Specifically, we can assist you with:

- Online ordering, scheduling sample submission, and sample shipping
- Coordinating delivery of your complimentary shipping materials
- Results retrieval and interpretation
- One-on-one or group demonstrations and training on LTM™
- Pricing, quotes, and invoice questions

Genetically Engineered Models and Services

Phone: 1.800.338.9680
Email: GEMSServices@crl.com
Web: criver.com/GEMS

Our team will facilitate the initiation and completion of your project. Our client portfolio managers will gain a deeper understanding of the goals and challenges of each project and will serve as an integral part of your study team, an extension of your internal efforts, and a valuable partner in your research.

VAF* Health Profiles

The table below lists the infectious agents specifically excluded from our VAF/Plus®, VAF/Elite®, and immunodeficient VAF/Elite® animal colonies.

For further information regarding viral profiles, microbiological flora, or the comprehensive list of agents included in the Charles River health surveillance program, visit the Health Reports section of our website, call us at 1.800.338.9680, or email us at TAD@crl.com.

Charles River is committed to providing you with high-quality genetically standardized models such as VAF/Plus® and VAF/Elite® animals, which are free of select infectious agents and parasites. We understand that selecting the appropriate animal model for your studies is critical to your research success.

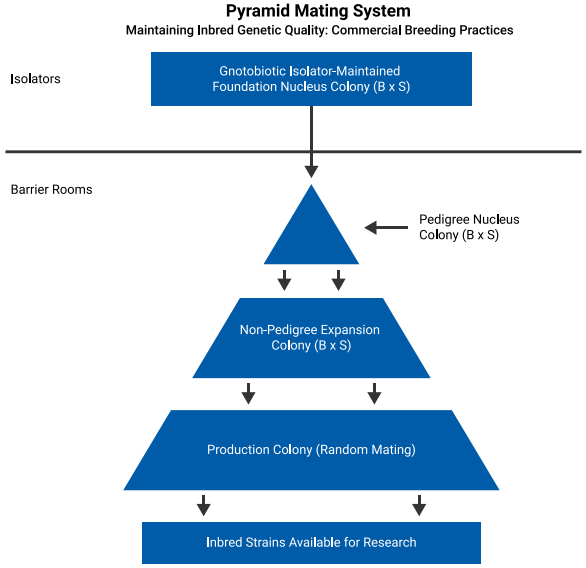
Health Profile	Species	Agents Excluded
VAF/Plus®	Mouse	SEND, PVM, MHV, MVM, MPV, MNV, TMEV (GDVII), REO, EDIM, LCMV, ECTRO, MAV, MCMV, K, POLY, HANT, MTLV, LDV
		C. rodentium, CAR Bacillus (F. rodentium), C. kutscheri, H. bilis, H. hepaticus, Helicobacter spp., M. pulmonis, Salmonella spp., S. moniliformis, Tyzzer's Disease
		Ectoparasites, Helminths, *E. cuniculi,* pathogenic enteric protozoa
	Rat	SEND, PVM, SDAV, KRV, H-1, RPV, RMV, REO, RTV, LCMV, HANT, MAV
		CAR Bacillus (F. rodentium), C. kutscheri, H. bilis, H. hepaticus, Helicobacter spp., M. pulmonis, Salmonella spp., S. moniliformis, Tyzzer's Disease
		Ectoparasites, Helminths, pathogenic enteric protozoa, *E. cuniculi*
	Guinea Pig	SEND, PVM, REO, LCMV, GAV
		B. bronchiseptica, M. pulmonis, Salmonella spp., S. moniliformis, Strep. zooepidemicus
		Ectoparasites, Helminths, pathogenic enteric protozoa
	Hamster	SEND, PVM, REO, LCMV, SARS-CoV-2
		Salmonella spp.
		Ectoparasites (excluding Demodex), Helminths, *E. cuniculi*
	Rabbit	RHDV
		P. multocida, Salmonella spp., Treponema, Tyzzer's disease
		Ectoparasites, Helminths, *E. stiedae, E. cuniculi*
VAF/Elite®	Mouse (Immunocompetent)	These mice are free of all the agents listed above in the VAF/Plus® mouse profile, plus MuCPV, *B. bronchiseptica, C. bovis, K. oxytoca, K. pneumoniae, P. multocida, R. heylii, R. pneumotropicus, P. mirabilis, P. aeruginosa, Staph. aureus, Strep. pneumoniae, Beta Strep. spp., Pneumocystis spp.,* enteric protozoa
	Mouse (Immunodeficient)	These mice are free of all the agents listed above in the VAF/Plus® mouse profile, plus MuCPV, *B. bronchiseptica, C. bovis, K. oxytoca, K. pneumoniae, P. multocida, R. heylii, R. pneumotropicus, P. mirabilis, P. aeruginosa, Staph. aureus, Strep. pneumoniae, Beta Strep. spp., Pneumocystis spp.,* enteric protozoa
	Rat (Immunodeficient)	These rats are free of all the agents listed above in the VAF/Plus® rat profile, plus *B. bronchiseptica, C. bovis, K. oxytoca, K. pneumoniae, Pneumocystis spp., P. multocida, R. heylii, R. pneumotropicus, P. mirabilis, P. aeruginosa, Staph. aureus, Strep. pneumoniae, Beta Strep. spp.,* enteric protozoa

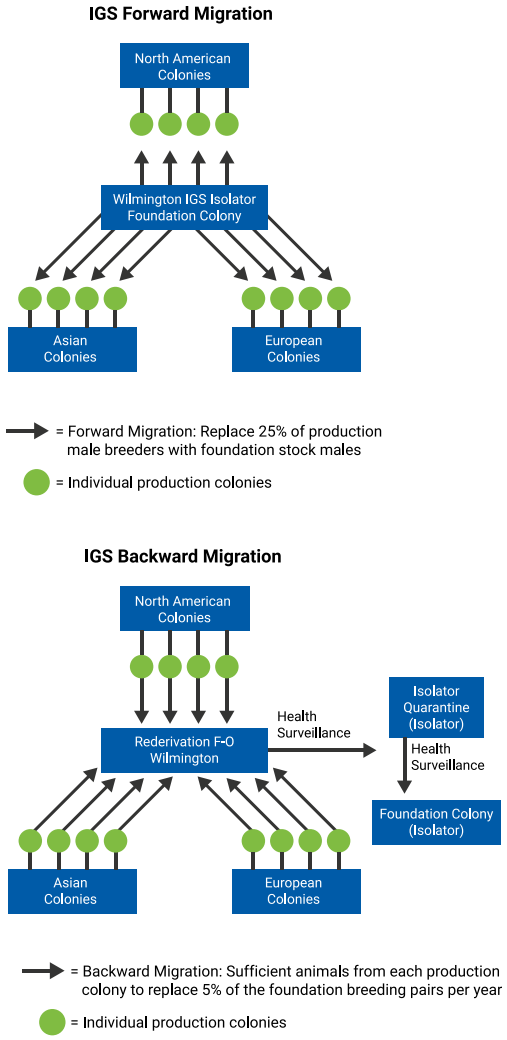
**Virus Antibody Free (VAF)*
See glossary of terms for abbreviation key of agents.

International Genetic Standardization (IGS) Program

Learn More

Our unique International Genetic Standardization (IGS) program is designed to manage the health and genetics of your inbred/outbred mice and rat strains to ensure high quality and uniformity, regardless of where they are bred. The IGS management system is validated by genetic monitoring of animals from the central Foundation colonies and each global production barrier room. Our genetic monitoring program utilizes single nucleotide polymorphism markers (SNPs) distributed across all chromosomes. Outbred models are assessed once annually to assess whether colonies maintain similar levels of genetic variability, thus indicating that the breeding and migration program is successful in minimizing genetic drift between colonies. For inbred colonies, genetic monitoring is performed on animals from each barrier room production colony once quarterly utilizing a panel of SNP markers designed to distinguish all inbred strains bred at our facilities from one another to certify the genetic authenticity of each inbred strain.





Animal Model Evaluation Program

Get Started

Which Animal Model is Right for Your Study?

Selecting the appropriate animal model for your studies is critical to the success of your research. The Charles River Animal Model Evaluation Program allows you to assess the quality and compatibility of our animal models before making a commitment. Whether you have a new research protocol, are conducting or fine-tuning a pilot study, or simply exploring the opportunity to switch to a new animal model, this program can help you make the right choice.

Animal Model Evaluation Program Benefits

No Cost: Select the animal model you would like to evaluate and we will provide them to you at no cost.

Risk Reduction: Determine whether a model fits your research protocols before making a significant time and financial investment.

Assess Quality: Assess the quality of our research animal models on your own terms.

Support: Experience Charles River's industry-leading customer support network.

Evaluation Program Includes:

- Standard Mouse and Rat Models
- Oncology Animal Models
- Disease/Translational Models
- Surgically Altered Models
- Biospecimens

Birth Dates

Age of animals are furnished on shipping documents for orders placed by age and are based on cohort of specified animals that all share the same week of birth encompassing a defined seven-day period; once per week the entire cohort ages to the next age bracket. Exact age placed orders will have confirmed birth dates of the specified animals.

Ordering Information

To accommodate your need for prompt shipment, sales are made on the basis of telephone orders without written documentation. Email confirmation of orders are available upon request. Our acceptance of your order is expressly made conditional on your consent to our General Terms and Conditions of Sale, and our prices have been set accordingly.

Any provision of a purchase order or confirmation that is additional to, or conflicts with, our General Terms and Conditions of Sale is expressly rejected and shall not be binding on us. Please consider this before placing your order.

Some animal models are produced only in small quantities. Upon your request, we will work to scale up our colony production to meet your needs.

The prices in this catalog are for customers located in the United States who are purchasing research models and services sourced from the United States. All other customers should contact Customer Service for pricing in your region.

For additional information, please contact the Customer Service Department at 1.800.LAB.RATS (1.800.522.7287) or at researchmodels@crl.com.

Cancellation Policies

Standard or Regular Animal Orders

To avoid charges, cancellation of standard animal orders must be received at least one business day prior to the scheduled shipment date.

Humanized Mice Orders

HuPBMC-NCG mice orders must be canceled prior to the scheduled injection day to avoid charges. HuCD34-NCG mice orders must be canceled at least 11 business days prior to scheduled shipment. Large or multiple orders, greater than 45 animals, must be canceled at least 21 business days prior to the scheduled shipment. Otherwise, order(s) are subject to a cancellation fee.

C57BL/6 Aged Mice Orders

Cancellations will incur a restocking fee of 25% of the total order value.

Rabbit Orders

Cancellation of rabbit orders at 3.0 kg or greater will incur a 50% cancellation fee for the cost of the animals. Cancellations must be received at least five business days prior to the scheduled ship date.

Timed Pregnant Animals

To avoid charges, cancellations for pregnant animals must be received prior to the scheduled mating day.

Value-Added Services

To avoid charges, cancellations for value-added services, including, but not limited to, tattooing or ear tagging, must be received at least five business days prior to the ship date. Cancellations for orders with Somark Labstamp® identification numbers must be received at least ten business days prior to the ship date.

Surgical and Biospecimen Services

Cancellations must be received at least **six business days (eleven business days for guinea pigs & other intercompany animal transfers)** prior to the scheduled ship date for most orders. Notice of cancellation is extended prior to the scheduled ship date for procedures with prolonged holding times, including, but not limited to: 5/6 nephrectomy, Parkinson's, and telemetry procedures. Order cancellations requested outside of our policy will incur fees for animals and a cancellation fee for surgery procedure(s).

Miscellaneous Charges

Surcharges (where applicable)	
1-gram weight range for inbred mice	Add 5%
5-gram weight range for non-obese rats and hamsters	Add 25%
10-gram weight range for non-obese rats	Add 15%
Retired breeders with specified weight or approximate age	Add 50%

Applicable Container and Other Charges	
Filtered shipping container (Sew Easy™ and Tear Easy)	26.60 each
Gnoto-safe® shipping container	49.55 each
Weight list	1.00 per animal

Shipments Outside North America

To avoid charges, cancellation of standard animal orders must be received at least one business day prior to the scheduled shipment date. Documentation fees may still apply.

Import/Export Preparation Charges	
Preparation of appropriate documentation for international shipment of Charles River products	740.00 per shipment*
Importation or exportation of non-Charles River products	1,103.00 per shipment*

** Plus fixed costs*

Pregnant Animal Guarantee Policy

Charles River produces pregnant animals to your order specifications. Most barrier-reared rats and mice can be safely and accurately palpated for pregnancy after 13 days of gestation. Prior to that, pregnancy is determined by observation of a vaginal plug. Following timed exposure to the male, the date the copulatory plug is found (plug date) is considered to be day one of gestation unless noted otherwise. For additional information and/or strain availability, contact the Customer Service Department at 1.800.LAB.RATS (1.800.522.7287).

	Percent Guaranteed Pregnant at Time of Shipment		
Stock or Strain	**Timed Pregnant Up to 12 Days Gestation**	**Timed Pregnant 13 Days Gestation and Over**	**Untimed Pregnant 13-17 Days Gestation Only**
Outbred rats	Plug guarantee only	100%	95%
Outbred mice	Plug guarantee only	100%	100%
Inbred rats, inbred and specialty mice	Plug guarantee only	75%	75%
NZW rabbits*	Plug guarantee only	100%	N/A

Note: We do not guarantee the number of offspring per litter. Due to natural variations in the length of gestation, the exact day of parturition is not guaranteed. To avoid charges, cancellations for pregnant animals must be received prior to the scheduled mating day.
** For the NZW rabbit, the breed date is day 0 for all timed pregnant orders.*

Filtered (Sew Easy™ and Tear Easy) Shipping Container Densities

It is our responsibility to maintain the strictest health and welfare standards when shipping our animals, not only because it's the right thing to do, but because our animals are vital to your research. To help make the comfort and care of our animals a priority, we provide several crates that are tailored to established shipping density guidelines for a variety of species. Our shipping crates have viewing windows that allow you to inspect the animals and assess their interior conditions during and after shipping. The interior of our filtered crates is UV-light irradiated prior to packing animals, and our individual Gnoto-safe® plastic containers are disinfected with a cold sterilant prior to packing the animals.

Mice

Gram Range Non-Obese	Days Range Non-Obese	Days Range Obese	Animals per Container*
Up to 35	Up to 56	Up to 56	40
36-plus	57-plus	57-70	33
–	–	71-plus	20

** For aged mice, the number of animals per container may vary due to the animals' age or condition.*

Rats

Gram Range Non-Obese	Days Range Non-Obese	Days Range Obese	Animals per Container*
Up to 50	Up to 21	Up to 21	20
51–75	22–26	22-24	17
76–100	27–30	25–26	13
101–125	31–35	27–28	10
126–150	36–42	29–36	9
151–200	43–50	37–42	8
201–250	51–60	43–48	6
251–300	61–70	49–56	5
301–400	71–94	57–63	4
401–450	95-plus	64–70	3
451-plus		71-plus	2

**Number of animals per container may be reduced as needed based on model requirements.*

Rabbits

Kilogram Range	Animals per Container
Up to 2.0	2
2.1-plus	1

Guinea Pigs

Gram Range	Days Range	Animals per Container
Up to 350	Up to 33	10
351-600	34-65	6
601-800	66-81	5
801-plus	82-plus	4

Gerbils

Gram Range	Days Range	Animals per Container
Up to 35	Up to 35	35
36-50	36-56	25
51-70	57-84	20
71-plus	85-plus	15

Hamsters

Gram Range	Days Range	Animals per Container
Up to 50	Up to 21	25
51-70	22-42	20
71-plus	43-plus	15*

** Females weighing over 90 grams or more than 43 days old are packed three per crate.*

100% Recyclable Gnoto-safe® Shipping Container

	Mice	Rats
Animals per container*	30	2

** Two cages per container.*

Special Services

	Per Container			
	Rats	Mice	Guinea Pigs	Hamsters
Retired breeders	3	33	2	3
Proven breeders	3	33	2	3
Timed pregnants	7	17	3	3
Untimed pregnants	7	17	3	3
Littermates	7 (1 litter)	7 (1 litter)	3 (1 litter)	10 (1 litter)
Mothers with pups	2	3	2	2
Lactating females	7	33	3	15

Rat Models

Charles River is dedicated to providing you with consistent availability of the highest quality research models globally. Our comprehensive portfolio of outbred, inbred, and disease/translational rat models enables you to select the appropriate animal model for your research.

Outbred Rat Models

Long-Evans Rats

Origin Originated by Drs. Long and Evans in 1915 by crossing several Wistar Institute white females with a wild gray male. To Charles River from Canadian Breeding Farm and Laboratories in 1978.

CD® IGS Rats

when ordering, specify CD

Strain Code: 001

Learn More

Weight in Grams	Male Price	Female Price
Up to 50	25.00	25.07
51-75	31.72	33.21
76-100	38.97	40.57
101-125	44.20	45.92
126-150	51.03	56.32
151-175	54.24	61.66
176-200	63.26	66.41
201-225	67.48	70.27
226-250	73.37	76.28
251-275	78.95	86.02
276-300	82.34	–
301-325	87.03	–
326-350	95.46	–
351-plus	Price upon request	Price upon request
Retired breeders	63.38	61.66
Littermates 21 days old	48.12	48.12
Lactating rat with litter	–	225.98
Timed pregnant*	–	222.43
Untimed pregnant*	–	186.46

** For timed and untimed pregnant, please see our pregnant animal guarantee policy.*

Nomenclature Crl:CD(SD)

Origin Originated in 1925 by Robert W. Dawley from a hybrid hooded male and a female Wistar rat. To Charles River in 1950 from Sprague Dawley, Inc. In 1991, eight colonies were selected to form the IGS foundation colony. Rederived into an isolator foundation colony in 1997. IGS refers to animals bred using the Charles River International Genetic Standardization system.

Coat Color White (albino)

Research Application General multipurpose model, safety and efficacy testing, aging, nutrition, diet-induced obesity, oncology

Sprague Dawley® Rats*

when ordering, specify SAS SD

Strain Code: 400

Learn More

Weight in Grams	Male Price	Female Price
Up to 50	25.72	25.16
51-75	29.51	30.81
76-100	34.54	36.78
101-125	39.71	40.20
126-150	42.62	46.84
151-175	48.21	51.25
176-200	53.68	56.48
201-225	59.95	61.26
226-250	64.06	65.80
251-275	67.23	–
276-300	73.06	–
301-325	76.23	–
326-plus	Price upon request	Price upon request
Retired breeders	53.74	52.69
Littermates 21 days old	30.63	30.63
Lactating rat with litter	–	176.88
Timed pregnant†	–	170.36
Untimed pregnant†	–	136.31

** Specialty model. Discounts may not apply.*
† For timed and untimed pregnant SAS SD rats, determination of pregnancy is by observation of vaginal plug. Plug date is considered to be day zero of gestation. Please see our pregnant animal guarantee policy.

Nomenclature Crl:SD

Origin To SASCO from ARS/Sprague Dawley in 1979. To Charles River in 1996.

Coat Color White (albino)

Research Application General multipurpose model, safety and efficacy testing, aging, nutrition, diet-induced obesity, oncology

Sprague Dawley® is a registered trademark of Envigo Holding Inc.

Long-Evans Rats

Strain Code: 006

Learn More

Weight in Grams	Male Price	Female Price
Up to 50	31.98	32.40
51-75	37.71	40.34
76-100	45.60	47.74
101-125	51.03	52.52
126-150	55.68	57.59
151-175	59.26	66.89
176-200	65.52	70.72
201-225	70.00	78.00
226-250	79.55	84.45
251-275	86.95	95.78
276-300	91.49	–
301-325	97.28	–
326-plus	Price upon request	Price upon request
Retired breeders	66.06	65.47
Littermates 21 days old	51.08	51.08
Lactating rat with litter	–	247.84
Timed pregnant*	–	230.06
Untimed pregnant*	–	188.53

** For timed and untimed pregnant, please see our pregnant animal guarantee policy.*

Nomenclature Crl:LE

Origin Originated by Drs. Long and Evans in 1915 by crossing several Wistar Institute white females with a wild gray male. To Charles River from Canadian Breeding Farm and Laboratories in 1978.

Coat Color White with black hood; occasionally white with brown hood

Research Application General multipurpose model, behavioral research, diet-induced obesity

Sentinel Rats

(VAF/Elite® Health Status)

Strain Code: 118

Learn More

Age in Weeks*	Female Price
3-5 (21-41 days)	57.09

** Estimated age*

Information regarding the VAF/Elite® health profile can be found in the research models overview section.

Nomenclature Crl:NIH-*Foxn1*^{rnu}

Origin This immunocompetent rat is the heterozygous offspring from the mating of a heterozygous female and a homozygous male. For the origin, see the Nude Rat (RNU) in our Immunodeficient Models section.

Coat Color White, black, black and white

Research Application Multipurpose

Wistar IGS Rats

Strain Code: 003

Learn More

Weight in Grams	Male Price	Female Price
Up to 50	25.67	26.26
51-75	32.47	34.97
76-100	39.21	41.48
101-125	45.60	48.16
126-150	50.91	54.42
151-175	54.13	60.75
176-200	62.48	65.28
201-225	67.62	69.71
226-250	73.29	75.19
251-275	79.07	–
276-300	82.72	–
301-325	85.16	–
326-plus	Price upon request	Price upon request
Retired breeders	63.92	63.43
Littermates 21 days old	48.34	48.34
Lactating rat with litter	–	226.65
Timed pregnant*	–	211.43
Untimed pregnant*	–	176.89

** For timed and untimed pregnant, please see our pregnant animal guarantee policy.*

Nomenclature Crl:WI

Origin To Scientific Products Farm, Ltd. [predecessor of Charles River United Kingdom] in 1947 from Wistar Institute. To Charles River in 1975 from Charles River UK. This particular colony was selected because of a low incidence of hydronephrosis. IGS refers to animals bred using the Charles River International Genetic Standardization system.

Coat Color White (albino)

Research Application General multipurpose model, infectious disease research, safety and efficacy testing, aging

Wistar Han IGS Rats

Strain Code: 273

Learn More

Weight in Grams	Male Price	Female Price
Up to 50	27.16	27.21
51-75	34.61	37.42
76-100	42.02	44.64
101-125	49.06	51.03
126-150	53.47	58.90
151-175	55.98	62.90
176-200	63.43	68.86
201-225	69.71	74.00
226-250	77.04	–
251-275	81.28	–
276-300	85.34	–
301-325	92.20	–
326-plus	Price upon request	Price upon request
Retired breeders	66.89	64.40
Littermates 21 days old	50.73	50.73
Lactating rat with litter	–	237.81
Timed pregnant*	–	231.93
Untimed pregnant*	–	194.18

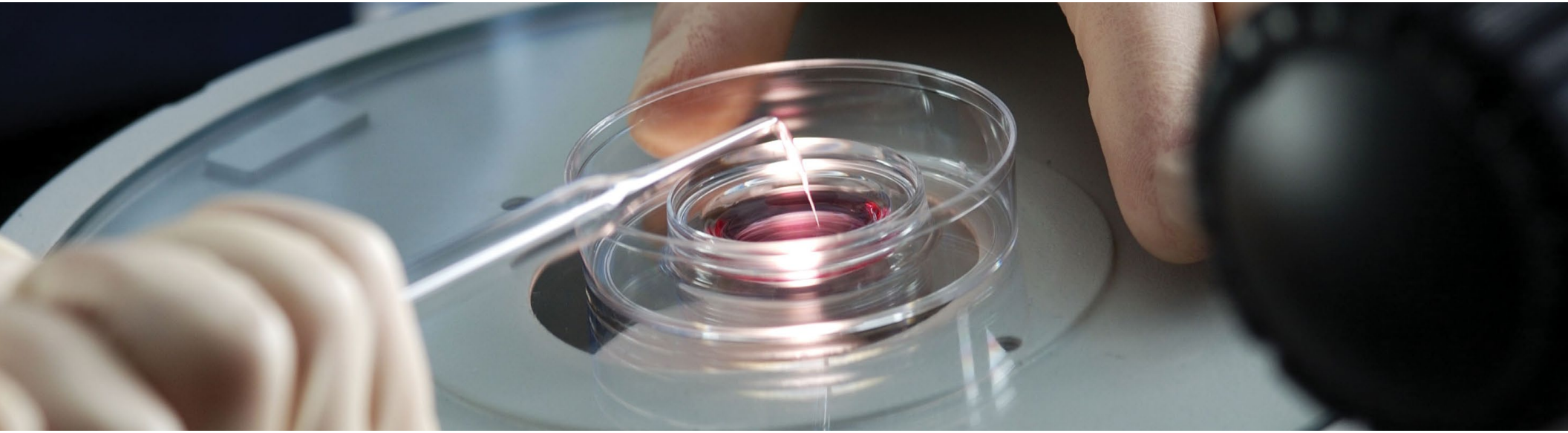
** For timed and untimed pregnant, please see our pregnant animal guarantee policy.*

Nomenclature Crl:WI(Han)

Origin Rederived by GlaxoWellcome from Han Wistar stock supplied by BRL. Transferred to Charles River UK in 1996. Transferred to Charles River in 1997 and rederived into isolator-maintained foundation colony. IGS refers to animals bred using the Charles River International Genetic Standardization system.

Coat Color White (albino)

Research Application General multipurpose model, safety and efficacy testing, aging, oncology



Cryopreserved

All strains listed below are currently maintained as cryopreserved models. **Please allow a minimum of 12-15 weeks for delivery.** A dedicated supply can be established for large orders, and breeding pairs may be available for select models. Contact our Customer Service Department at ResearchModels@crl.com for pricing and availability.

Common Name	Nomenclature	Coat Color	Therapeutic Area
CD® Hairless	Crl:CD-*Prss8*^{hr}	Hairless, albino background	Dermatology

Inbred Rat Models

F344 Rats

Origin Derived from outbred Wistar Kyoto stock, to NIH in 1966 from Okamoto at F13. To Charles River from NIH in 1973 at F32.

Brown Norway Rats

when ordering, specify BN

Strain Code: 091

Learn More

Age in Weeks*	Male Price	Female Price
3 (21-27 days)	81.56	82.86
4 (28-34 days)	93.05	104.30
5 (35-41 days)	113.40	125.80
6 (42-48 days)	130.09	152.18
7 (49-55 days)	158.48	152.18
8 (56-62 days)	164.86	177.78
9 (63-69 days)	187.27	177.78
10 (70-76 days)	198.26	229.45
11 (77-83 days)	198.26	229.45
12-plus	Price upon request	Price upon request
Retired breeders	90.13	86.81
Littermates 21 days old	92.34	92.34
Lactating rat with litter	–	517.24
Untimed pregnant†	–	395.60

** Estimated age*
† For timed and untimed pregnant, please see our pregnant animal guarantee policy.

Nomenclature BN/Crl

Origin Silvers and Billingham began brother x sister matings with selection for histocompatibility in 1958 from a brown mutation in a stock of wild rats maintained by King and Aptekman in a pen-bred colony of rats trapped from the wild in 1930 by King at the Wistar Institute. To Charles River from Radiobiology Institute, Netherlands in 1976.

Coat Color Non-agouti brown

Research Application Genetic mapping, respiratory inflammation, immunological dysfunction, aging, transplantation research

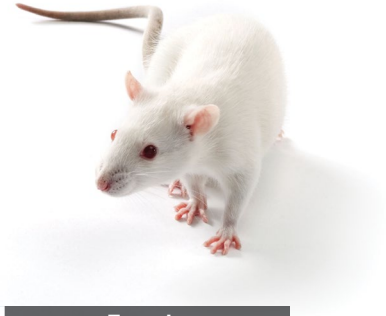
MHC Haplotype $RT1^{n}$

Fischer Rats

when ordering, specify CDF™

Strain Code: 002

Learn More



Age in Weeks*	Male Price	Female Price
3 (21-27 days)	51.32	55.79
4 (28-34 days)	63.32	61.26
5 (35-41 days)	75.62	74.86
6 (42-48 days)	82.75	83.69
7 (49-55 days)	93.14	100.15
8 (56-62 days)	98.97	100.15
9 (63-69 days)	110.53	100.15
10-plus	Price upon request	Price upon request
Retired breeders	73.06	71.69
Littermates 21 days old	77.35	77.35
Lactating rat with litter	–	409.50
Timed pregnant†	–	332.83
Untimed pregnant†	–	299.59

** Estimated age*
† For timed and untimed pregnant, please see our pregnant animal guarantee policy.

Nomenclature F344/DuCrl

Origin From mating #344 of rats purchased from local breeder (Fischer). Colony originated by M.R. Curtis, Columbia University Institute for Cancer Research. Dunning at Columbia inbred to form the strain starting in 1920. Dunning to Charles River in 1960 at F68.

Coat Color White (albino)

Research Application General multipurpose model, aging, safety and efficacy testing, surgical model, oncology, nutrition

MHC Haplotype $RT1^{lv}$

F344 Rats*

when ordering, specify SAS FISCH

Strain Code: 403

Learn More

Age in Weeks†	Male Price	Female Price
3 (21-27 days)	50.39	53.61
4 (28-34 days)	57.41	53.61
5 (35-41 days)	63.87	60.45
6 (42-48 days)	72.75	69.08
7 (49-55 days)	91.09	77.35
8 (56-62 days)	93.94	77.35
9 (63-69 days)	98.79	78.28
10-plus	Price upon request	Price upon request
Retired breeders	67.73	65.73
Littermates 21 days old	107.37	107.37
Lactating rat with litter	–	415.89
Timed pregnant‡	–	198.57
Untimed pregnant‡	–	160.92

** Specialty model. Discounts may not apply.*
† Estimated age
‡ For timed and untimed pregnant F344 rats, determination of pregnancy is by observation of vaginal plug. Plug date is considered to be day zero of gestation. Please see our pregnant animal guarantee policy.

Nomenclature F344/NCrl

Origin Derived from NIH stock in 1992 by SASCO. To Charles River in 1996.

Coat Color White (albino)

Research Application General multipurpose model, aging, safety and efficacy testing, surgical model, oncology, nutrition

MHC Haplotype RT1^{lv}

Lewis Rats

Strain Code: 004

Learn More

Age in Weeks*	Male Price	Female Price
3 (21-27 days)	62.87	60.71
4 (28-34 days)	70.33	68.84
5 (35-41 days)	74.37	76.30
6 (42-48 days)	90.28	87.85
7 (49-55 days)	105.37	94.62
8 (56-62 days)	113.02	104.32
9 (63-69 days)	118.86	104.32
10 (70-76 days)	128.85	104.32
11-plus	Price upon request	Price upon request
Retired breeders	72.81	70.14
Littermates 21 days old	72.01	72.01
Lactating rat with litter	–	341.16
Timed pregnant†	–	293.56
Untimed pregnant†	–	228.70

** Estimated age*
† For timed and untimed pregnant, please see our pregnant animal guarantee policy.

Nomenclature LEW/Crl

Origin Developed by Dr. Lewis from Wistar stock in the early 1950s. To Charles River from Tulane in 1970 at F34.

Coat Color White (albino)

Research Application Transplantation research, induced arthritis/inflammation, experimental allergic encephalitis, STZ-induced diabetes

MHC Haplotype RT1^{l}

SRG Rats

Strain Code: 707

Learn More

	Male	Female
Age in Weeks*	Price	Price
3 (21-27 days)	384.04	384.04
4 (28-34 days)	400.58	400.58
5 (35-41 days)	417.11	417.11
6 (42-48 days)	433.65	433.65
7 (49-55 days)	450.19	450.19
8 (56-62 days)	466.73	466.73
9 (63-69 days)	483.26	483.26
10 (70-76 days)	499.80	499.80
11 (77-83 days)	516.34	516.34
12 (84-90 days)	532.88	532.88
13 (91-97 days)	549.41	549.41
14 (98-104 days)	565.95	565.95

**Estimated age*

Nomenclature Sprague Dawley-*Rag2*^{em2hera} *Il2rg*^{em1hera}/HblCrl

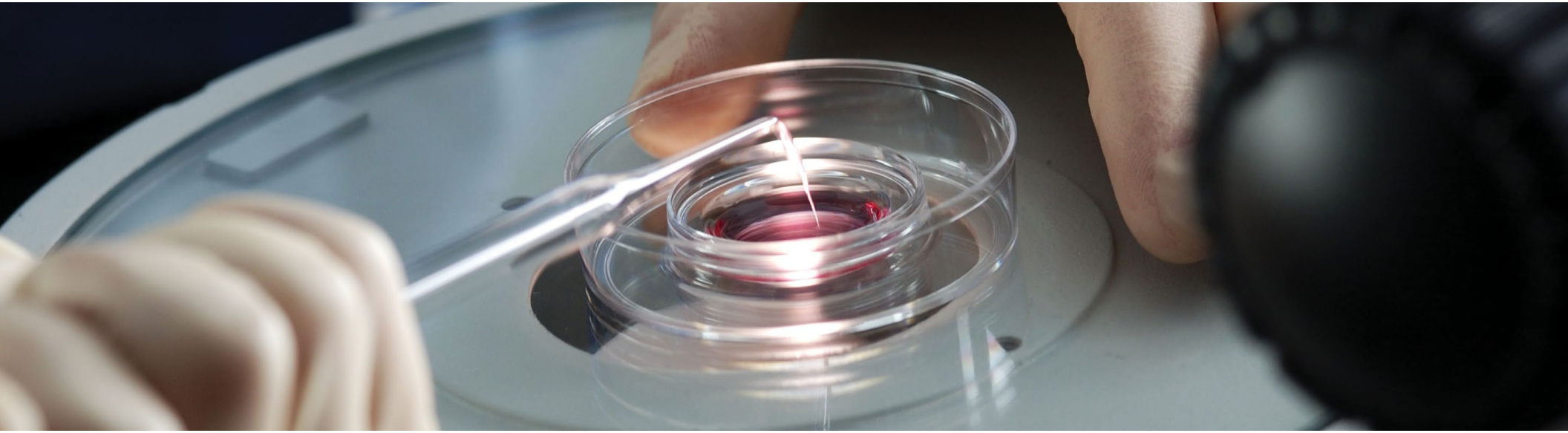
Origin To Charles River from Hera Biolabs in 2021. The SRG (Sprague Dawley, Rag2, Il2rg- "SRG") is a severely immunodeficient inbred rat created through knockout mutations in the *Rag2* and *Il2rgamma* genes, resulting in a deficiency in mature B, T, and NK cells.

Coat Color White

Research Application Tumor biology, oncology, immunology, xenograft transplant research, infectious disease

Commercial use of the SRG may be further subject to Hera Biolabs' Conditions of Use.

The SRG is eligible for our Animal Model Evaluation program.



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Common Name	Nomenclature	Coat Color	Therapeutic Area
Copenhagen	COP/CrCrl	White with a brown hood	Oncology

Disease/ Translational Rat Models

SHR Rats

Origin Derived from outbred Wistar Kyoto stock. To NIH in 1966 from Okamoto at F13. To Charles River from NIH in 1973 at F32.

Overview of Characteristics





Characteristic	Dahl/SS	SHR	ZDF	ZSF1	Zucker
Insulin resistance	+	+	+	+	+
Hyperinsulinemia	+	+	+	+	+
Type 2 diabetes	–	–	+	+	–
Fasting hyperglycemia	–	–	+	+	–
Hypertension	+	+	–	+	–
Obesity	–	–	+	+	+
Cardiovascular disease	–	–	–	–	–
Hypertriglyceridemia	+	+	+	+	+
Hypercholesterolemia	+	+	+	+	+
Nephropathy	+	–	+, 1	+, 2	+, 1
Leptin receptor defect	–	–	+	+	+
Special diet requirements	+	–	+	+	–
Genetics	I	I	I	H	O

+ Exhibits the characteristic

– Does not exhibit the characteristic

1 Hydronephrosis (interference)

2 Hydronephrosis (interference) is found infrequently

I Inbred

O Outbred

H Hybrid

NOTE: Please contact Customer Service at 1.800.LAB.RATS (1.800.522.7287) for information on preconditioning of animal models from Charles River. For more information, please refer to our Preconditioning Services section.

Dahl/Salt-Sensitive Rats (Dahl/SS)

Strain Code: 320

Learn More

Age in Weeks*	Male Price	Female Price
3 (21-27 days)	200.63	196.83
4 (28-34 days)	214.92	210.69
5 (35-41 days)	226.01	221.76
6 (42-48 days)	239.92	235.43
7 (49-55 days)	250.55	245.68
8 (56-62 days)	270.48	265.29
9-plus	Price upon request	Price upon request
Timed Pregnant†	–	483.26

** Estimated age*
† For timed pregnant, please see our pregnant animal guarantee policy.

Nomenclature SS/JrHsdMcwiCrl

Origin Inbred from a congenic control group of Dahl/SS rats (SS/JrHsd) obtained from Dr. Theodore Kurtz (UCSF, CA), which were originally derived from the Harlan SS/Jr colony. Maintained at the Medical College of Wisconsin since 1991, this strain has undergone considerable marker-selected breeding to eliminate residual heterozygosity and genetic contamination. To confirm homozygosity, the strain was tested with 200 microsatellite markers (genome-wide scan at 20cM), all of which were homozygous for all regions tested (Cowley et al. 2000, Physiol. Genomics 2:107-115). To Charles River in 2001.

Coat Color White (albino)

Research Application Hypertension, diastolic heart failure, nephropathy

Note Charles River's standard production diet is Purina 5L79. Weanlings are fed AIN-76a or may be fed Charles River's standard 5L79 diet. This model can be preconditioned on a diet at the customer's request.

SHHF Rats

Strain Code: 373 (Obese), 374 (Lean +/?)

Learn More

Age in Weeks*	Male Price Obese	Male Price Lean	Female Price Obese	Female Price Lean
3-5 (21-41 days)	816.63	354.19	578.04	285.54
6 (42-48 days)	838.20	380.26	602.90	310.22
7 (49-55 days)	868.89	406.44	627.39	334.83
8 (56-62 days)	895.08	432.70	652.50	359.57
9 (63-69 days)	921.28	458.77	677.31	384.36
10-plus	Prices upon request		Prices upon request	

** Estimated age*

Nomenclature SHHF/MccGmiCrl-*Lepr*^{cp}/Crl

Origin Breeding stock for this colony was transferred to Dr. Sylvia McCune at the University of Chicago Medical School in 1983 from the laboratory of J.E. Miller at G.D. Searle and Company. The animals were developed by backcrossing the SHROB rat to the SHR/N rat. Dr. McCune obtained the colony after the seventh backcross and continued to inbreed past 20 generations to fix the congestive heart failure trait. To Genetic Models, Inc. in 1994. To Charles River in 2001.

Coat Color White (albino)

Research Application Heart failure, hypertension, type 2 diabetes, nephropathy, insulin resistance

SHR Rats

Strain Code: 007

Learn More

Age in Weeks*	Male Price	Female Price
3 (21-27 days)	124.44	120.60
4 (28-34 days)	134.31	129.38
5 (35-41 days)	148.93	148.74
6 (42-48 days)	159.01	158.75
7 (49-55 days)	174.34	174.21
8 (56-62 days)	191.24	190.00
9 (63-69 days)	208.20	206.97
10 (70-76 days)	228.99	215.41
11 (77-83 days)	251.02	236.00
12 (84-90 days)	277.15	260.64
13 (91-97 days)	294.55	277.01
14 (98-104 days)	324.18	304.95
15 (105-111 days)	343.16	322.63
16-plus	Price upon request	Price upon request
Retired breeders	175.18	168.69
Littermates 21 days old	184.74	184.74
Lactating rat with litter	–	773.52
Timed pregnant†	–	604.25
Untimed pregnant†	–	566.43

** Estimated age*
† For timed and untimed pregnant, please see our pregnant animal guarantee policy.

Nomenclature SHR/NCrl

Origin Okamoto, Kyoto School of Medicine, 1963, from outbred Wistar Kyoto male with marked elevation of blood pressure mated to female with slightly elevated blood pressure. Brother x sister mating with continued selection for spontaneous hypertension was then started. To NIH in 1966 from Okamoto at F13. To Charles River from NIH in 1973 at F32.

Coat Color White (albino)

Research Application Genetic hypertension, hypertensive drug research, ADHD model, safety and efficacy testing

MHC Haplotype $RT1^k$

WKY Rats

(control for the SHR)

Strain Code: 008

Learn More

Age in Weeks*	Male Price	Female Price
3 (21-27 days)	105.72	103.90
4 (28-34 days)	115.21	113.19
5 (35-41 days)	122.09	119.76
6 (42-48 days)	133.67	137.30
7 (49-55 days)	161.28	158.23
8 (56-62 days)	173.37	170.12
9 (63-69 days)	192.34	188.57
10 (70-76 days)	205.34	197.87
11 (77-83 days)	230.36	221.91
12 (84-90 days)	252.19	242.96
13 (91-97 days)	274.41	264.40
14 (98-104 days)	299.82	288.77
15 (105-111 days)	318.28	306.64
16-plus	Price upon request	Price upon request
Retired breeders	172.00	168.69
Littermates 21 days old	181.23	181.23
Lactating rat with litter	–	773.52
Timed pregnant†	–	604.25
Untimed pregnant†	–	566.43

** Estimated age*
† For timed and untimed pregnant, please see our pregnant animal guarantee policy.

Nomenclature WKY/NCrl

Origin Developed from our outbred Wistar stock from Kyoto School of Medicine to NIH 1971. This is the same stock from which the SHR/N strain was developed. To Charles River in 1974 from NIH at F11.

Coat Color White (albino)

Research Application Control for the SHR rat, ADHD model

MHC Haplotype $RT1^l$

ZDF Rats

Strain Code: 370 (Obese), 380 (Lean fa/+), 371 (Lean +/?)

Age in Weeks*	Male		
	Price Obese	Price Lean fa/+	Price Lean +/?
Up to 5 (21-41 days)	684.90	350.84	278.64
6 (42-48 days)	707.68	375.25	303.00
7 (49-55 days)	730.90	399.42	327.11
8 (56-62 days)	754.11	423.34	350.84
9 (63-69 days)	776.96	447.95	375.25
10 (70-76 days)	803.72	463.71	391.20
11-plus	Price upon request		

Age in Weeks*	Female		
	Price Obese	Price Lean fa/+	Price Lean +/?
Up to 5 (21-41 days)	488.76	350.84	278.64
6 (42-48 days)	511.72	375.25	303.00
7 (49-55 days)	535.14	399.42	327.11
8 (56-62 days)	558.17	423.34	350.84
9 (63-69 days)	581.07	447.95	375.25
10 (70-76 days)	607.89	463.71	391.20
11-plus	Price upon request		

** Estimated age*

Nomenclature ZDF-*Lepr*^{fa}/Crl

Origin A mutation occurred in a colony of outbred Zucker rats in the laboratory of Dr. Walter Shaw at Eli Lilly Research Laboratories in Indianapolis, IN in 1974-75. Part of this colony containing the mutation was moved to Indiana University Medical School (IUMS), to the laboratory of Dr. Julia Clark in 1977. Several groups of animals with diabetic lineage were identified and rederived in 1981. Inbreeding of selected pairs from this rederivation was done in the laboratory of Dr. Richard Peterson at IUMS. An inbred line of ZDF rat was established in 1985. To Genetic Models, Inc. in 1991. To Charles River in 2001.

Coat Color Black hooded with black stripe down the length of the back

Research Application Type 2 diabetes, hyperlipidemia, glucose intolerance, obesity, hyperinsulinemia

Note The Type 2 diabetes phenotype is triggered in the obese homozygous ZDF males and females by specific diets. Please contact our Technical Assistance Department at 1.800.338.9680 for additional information.

ZSF1 Rats

Strain Code: 378 (OBESE), 379 (LEAN +/?)

Age in Weeks*	Male		Female	
	Price Obese	Price Lean	Price Obese	Price Lean
3-5 (21-41 days)	709.26	278.32	513.25	274.40
6 (42-48 days)	735.39	304.02	538.56	299.77
7 (49-55 days)	760.63	329.70	564.30	325.14
8 (56-62 days)	785.94	355.01	590.00	351.21
9 (63-69 days)	811.89	380.69	615.75	376.33
10 (70-76 days)	841.87	398.79	645.60	394.36
11-plus	Price upon request		Price upon request	

** Estimated age*

Nomenclature ZSF1-*Lepr*^{fa} *Lepr*^{cp}/Crl

Origin This hybrid rat is a cross between a ZDF female and an SHHF male rat. This model was developed at Genetic Models, Inc. in Indianapolis, IN. To Charles River in 2001.

Coat Color Black hooded with black stripe down the length of the back

Research Application Hypertension, type 2 diabetes, hyperlipidemia, nephropathy, metabolic syndrome

Zucker Rats (Obese)

Strain Code: 185

Learn More

Age in Weeks*	Male Price	Female Price
4 (28-34 days)	487.50	469.40
5 (35-41 days)	510.53	491.55
6 (42-48 days)	536.85	516.92
7 (49-55 days)	576.45	555.01
8 (56-62 days)	608.73	586.01
9 (63-69 days)	639.47	615.87
10 (70-76 days)	669.08	644.34
11 (77-83 days)	686.92	661.49
12 (84-90 days)	707.43	681.16
13 (91-97 days)	759.56	731.28
Retired breeders	–	–

** Estimated age*

Nomenclature Crl:ZUC-*Lepr*^{fa}

Origin The obese or fatty condition appeared spontaneously in the 13M strain maintained at the Laboratory of Comparative Pathology of Theodore and Lois Zucker in Stow, MA. Research colonies were established at many institutions from this nucleus colony. To Charles River in 1985 from a research colony maintained at a pharmaceutical company.

Coat Color Four principal coat color variants: predominantly brown, brown and white, predominantly black, black and white

Research Application Insulin resistance, glucose intolerance, metabolic syndrome, genetic obesity

Zucker Rats (Lean)

Strain Code: 186

Learn More

Age in Weeks*	Male Price	Female Price
4 (28-34 days)	123.69	119.07
5 (35-41 days)	128.63	123.94
6 (42-48 days)	145.59	140.14
7 (49-55 days)	160.33	154.31
8 (56-62 days)	175.13	168.67
9 (63-69 days)	182.66	175.89
10 (70-76 days)	190.00	182.86
11 (77-83 days)	198.04	190.63
12 (84-90 days)	209.55	201.84
13 (91-97 days)	221.70	213.48
Retired breeders	–	203.66

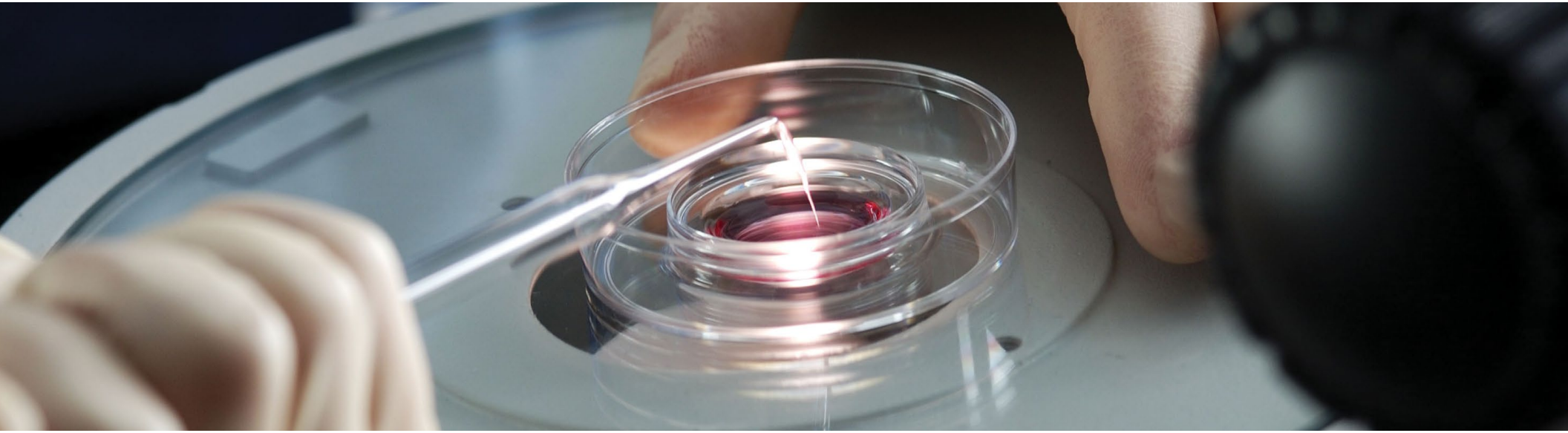
** Estimated age*

Nomenclature Crl:ZUC-*Lepr*^{fa}

Origin The obese or fatty condition appeared spontaneously in the 13M strain maintained at the Laboratory of Comparative Pathology of Theodore and Lois Zucker in Stow, MA. Research colonies were established at many institutions from this nucleus colony. To Charles River in 1985 from a research colony maintained at a pharmaceutical company.

Coat Color Four principal coat color variants: predominantly brown, brown and white, predominantly black, black and white

Research Application Insulin resistance, glucose intolerance, metabolic syndrome, genetic obesity



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Common Name	Nomenclature	Coat Color	Therapeutic Area
Buffalo	BUF/CrCrl	White (albino)	Oncology
Obese Prone	Crl:OP(CD)	White (albino)	Metabolic
Obese Resistant	Crl:OR(CD)	White (albino)	Control for Obese Prone
PCK	PCK/CrljCrl-*Pkhd1*^{pck}/Crl	White (albino)	Renal
SS-13BN	SS-Chr 13^{BN}/McwiCrl	White (albino)	Control for Dahl/SS
Stroke Prone	SHRSP/A3NCrl	White (albino)	Cardiovascular

Mouse Models

With more than 100 strains of mouse models, Charles River is positioned to provide you with the mouse models you require to meet your program goals. Our global network of production facilities ensures that you have consistent access to these models, regardless of location.

Outbred Mouse Models

SKH1-Elite Mice

Origin An uncharacterized/non-pedigreed hairless strain of mice was acquired by Temple University from a small commercial supplier in New York City. To Charles River from the Skin and Cancer Hospital, Temple University in 1986. This mouse is euthymic and immunocompetent.

CD-1® IGS Mice

Strain Code: 022

Learn More

Weight in Grams	Male Price	Female Price
Up to 12	10.21	9.98
13-15	11.17	11.17
16-18	11.23	11.23
19-21	11.47	11.47
22-24	11.64	11.64
25-plus	Price upon request	Price upon request
Retired breeders	11.64	11.05
Littermates 21 days old only	13.55	13.55
Lactating mouse with litter	–	122.43
Timed pregnant*	–	87.23
Untimed pregnant*	–	57.60

** For timed and untimed pregnant, please see our pregnant animal guarantee policy.*

Nomenclature Crl:CD1(ICR)

Origin The original group of Swiss mice that served as progenitors of this stock consisted of two male and seven female albino mice derived from a non-inbred stock in the laboratory of Dr. de Coulon, Centre Anticancéreux Romand, Lausanne, Switzerland. These animals were imported into the United States by Dr. Clara Lynch of the Rockefeller Institute in 1926. The Hauschka Ha/ICR stock was initiated in 1948 at the Institute for Cancer Research (ICR) in Philadelphia from "Swiss" mice of Rockefeller origin. To Dr. Edward Mirand of Roswell Park Memorial Institute where they were designated as HaM/ICR. To Charles River in 1959. IGS refers to animals bred using the Charles River International Genetic Standardization system.

Coat Color White (albino)

Research Application General multipurpose model, safety and efficacy testing, aging, surgical model, pseudopregnancy

NCI grantees, see our NCI Grantee Models section for an equivalent/alternative model with special NCI grantee pricing.

CD1-Elite Mice*†

Strain Code: 482

Learn More

Age in Weeks‡	Male Price	Female Price
3 (21-27 days)	29.78	29.38
4 (28-34 days)	30.22	29.61
5 (35-41 days)	30.56	29.78
6 (42-48 days)	30.72	30.22
7 (49-55 days)	38.01	37.17
56-plus	Price upon request	Price upon request

** VAF/Elite® health status*
† Information regarding the VAF/Elite® health profile can be found in the research models overview section.
‡ Estimated age

Nomenclature Crl:CD1(ICR)

Origin The original group of Swiss mice that served as progenitors of this stock consisted of two male and seven female albino mice derived from a non-inbred stock in the laboratory of Dr. de Coulon, Centre Anticancéreux Romand, Lausanne, Switzerland. These animals were imported into the United States by Dr. Clara Lynch of the Rockefeller Institute in 1926. The Hauschka Ha/ICR stock was initiated in 1948 at the Institute for Cancer Research (ICR) in Philadelphia from "Swiss" mice of Rockefeller origin. To Dr. Edward Mirand of Roswell Park Memorial Institute where they were designated as HaM/ICR. To Charles River in 1959.

Coat Color White (albino)

Research Application General multipurpose model, safety and efficacy testing, aging, surgical model, pseudopregnancy

CF-1™ Mice

Strain Code: 023

Learn More

Weight in Grams	Male Price	Female Price
Up to 12	10.45	10.45
13-15	11.47	11.47
16-18	11.52	11.52
19-21	11.59	11.59
22-24	11.64	11.64
25-plus	Price upon request	Price upon request
Retired breeders	11.47	11.05
Littermates 21 days old only	14.02	14.02
Lactating mouse with litter	–	124.87
Timed pregnant*	–	85.66
Untimed pregnant*	–	56.55

** For timed and untimed pregnant, please see our pregnant animal guarantee policy.*

Nomenclature Crl:CF1

Origin Obtained by Carworth Farms from a Missouri laboratory. Not descended from "Swiss" mice from Rockefeller Institute (probably of wild albino origin). Intensively inbred by Carworth for over 20 generations. This line was then reduced to a single pair and progeny outbred from that point forward to form a new stock. To Charles River in 1974 from a representative cross-section of the Carworth CF-1 colony.

Coat Color White (albino); carries brown behind its albino gene

Research Application General multipurpose model, safety and efficacy testing, infectious disease model

CFW® Mice (Swiss Webster)

Strain Code: 024

Learn More

Weight in Grams	Male Price	Female Price
Up to 12	10.44	10.44
13-15	11.29	11.48
16-18	11.36	11.53
19-21	11.84	11.84
22-24	12.09	12.09
25-plus	Price upon request	Price upon request
Retired breeders	11.48	11.29
Littermates 21 days old only	14.10	14.10
Lactating mouse with litter	–	126.42
Timed pregnant*	–	86.80
Untimed pregnant*	–	57.26

** For timed and untimed pregnant, please see our pregnant animal guarantee policy.*

Nomenclature Crl:CFW(SW)

Origin This stock resulted from the selective inbreeding by Dr. Leslie Webster using foundation animals from a large colony of Swiss mice maintained at Rockefeller Institute following importation from Switzerland in 1926. To Carworth Farms from Rockefeller Institute. Highly inbred at the time they were acquired by Carworth. This line was reduced to a single pair and progeny outbred from that point forward to form a new stock. To Charles River in 1974 from a representative cross-section of the Carworth CFW colony.

Coat Color White (albino); carries black agouti behind its albino gene

Research Application General multipurpose model, safety and efficacy testing

NCI grantees, see our NCI Grantee Models section for an equivalent/alternative model with special NCI grantee pricing.

SKH1-Elite Mice*†

Strain Code: 477

Learn More

Age in Weeks‡	Male Price	Female Price
3 (21-27 days)	60.26	60.26
4 (28-34 days)	65.40	65.40
5 (35-41 days)	68.63	68.63
6 (42-48 days)	70.13	70.13
7 (49-55 days)	73.42	73.42
8 (56-62 days)	84.22	84.22
9-plus	Price upon request	Price upon request
Retired breeders	71.46	71.46
Littermates 21 days old only	200.76	200.76
Lactating mouse with litter	–	533.79
Untimed pregnant§	–	383.14

** Isolator-maintained*
† Information regarding the VAF/Elite® health profile can be found in the research models overview section.
‡ Estimated age
§ For untimed pregnant, please see our pregnant animal guarantee policy.

Nomenclature Crl:SKH1-*Hr*^{hr}

Origin An uncharacterized/non-pedigreed hairless strain of mice was acquired by Temple University from a small commercial supplier in New York City. To Charles River from the Skin and Cancer Hospital, Temple University in 1986. This mouse is euthymic and immunocompetent.

Coat Color Hairless, albino background

Research Application Wound-healing model, dermatology, safety and efficacy testing

Sentinel Mice

(VAF/Elite® Health Status)

Strain Code: 491 Athymic HE, 089 NU HE

Learn More

Age in Weeks*	Female Price
3-5 (21-41 days)	17.47

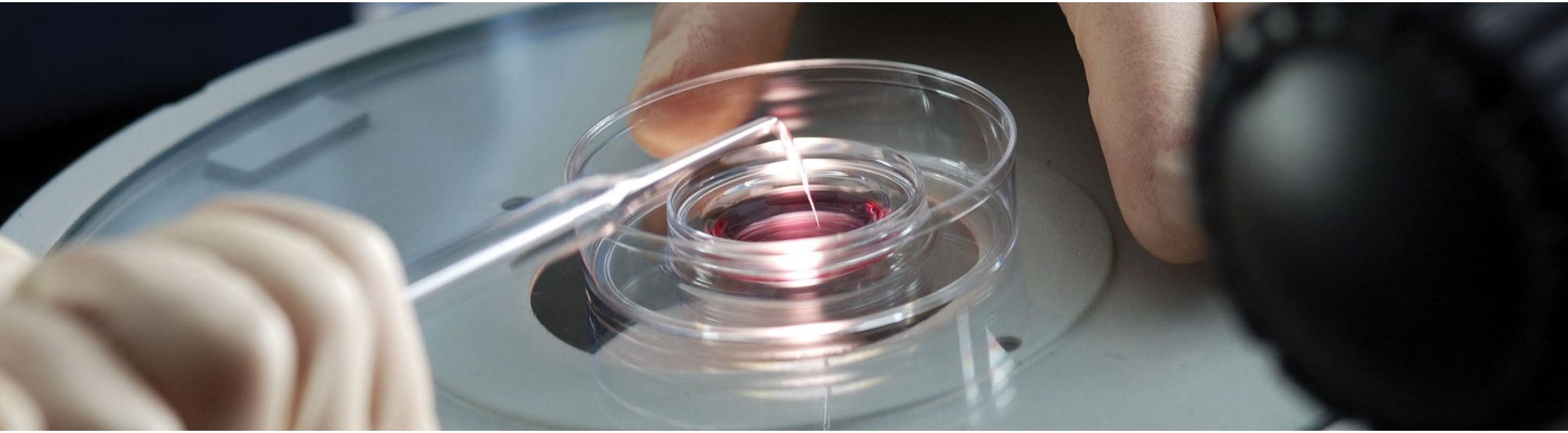
** Estimated age*
Information regarding the VAF/Elite® health profile can be found in the research models overview section

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

Origin This immunocompetent mouse is the heterozygous offspring from the mating of a heterozygous female and a homozygous male. For the origin, see the Athymic and NU/NU Nude mouse models.

Coat Color White (albino)

Research Application Multipurpose



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Common Name	Nomenclature	Coat Color
Black Swiss	Crl:NIHBL(S)	Black

Inbred Mouse Models

C3H Mice

Origin From a cross of a Bagg albino female and a DBA male by Strong in 1920. A litter of four females and two males sent to Andervont in 1930, then to Heston at F35. To NIH in 1951 from Heston at F57. To Charles River in 1974 from NIH.

129-Elite Mice*†

Strain Code: 476

Learn More

Age in Weeks‡	Male Price	Female Price
3 (21-27 days)	43.39	46.50
4 (28-34 days)	48.77	52.52
5 (35-41 days)	52.52	55.35
6 (42-48 days)	55.35	58.98
7 (49-55 days)	62.04	65.61
8-plus	Price upon request	Price upon request
Retired breeders	36.81	36.52
Littermates 21 days old only	52.86	52.86
Lactating mouse with litter	–	308.62
Untimed pregnant§	–	277.54

** Isolator-maintained*
† Information regarding the VAF/Elite® health profile can be found in the research models overview section.
‡ Estimated age
§ For untimed pregnant, please see our pregnant animal guarantee policy.

Nomenclature 129S2/SvPasCrl

Origin Developed by Dr. L.C. Stevens from The Jackson Laboratory. During the 1970s, Dr. Stevens introduced this line to the Pasteur Institute of Paris in the laboratory of Dr. J.L. Guenet. To Iffa Credo in 1996. To Charles River in 1998.

Coat Color Light-bellied agouti

Research Application Transgenic/knockout model development, large number of unmyelinated axons in lumbar motor roots

MHC Haplotype $H2^b$

B6 Albino Mice*

Strain Code: 493

Learn More

Age in Weeks†	Male Price	Female Price
3 (21-27 days)	51.24	51.99
4 (28-34 days)	53.44	54.42
5 (35-41 days)	55.58	56.61
6 (42-48 days)	65.11	61.24
7 (49-55 days)	70.02	65.91
8 (56-62 days)	72.51	72.51
9-plus	Price upon request	Price upon request

** Isolator-maintained*
† Estimated age

Nomenclature B6N-*Tyr*$^{c\text{-}Brd}$/BrdCrCrl

Origin Received by NCI from Dr. Allan Bradley at Baylor College of Medicine in 2000. The B6 albino strain is a spontaneous albino mutant coisogenic C57BL/6 strain. The mice contain a mutation in the tyrosinase gene and when homozygous for the mutation, the coat color of the mice is albino rather than black. To Charles River in 2009 from NCI.

Coat Color White (albino)

Research Application Creation of chimeras with B6N-derived embryonic stem cells

MHC Haplotype $H2^b$

NCI grantees, see our NCI Grantee Models section for an equivalent/alternative model with special NCI grantee pricing.

NCI B6-Ly5.1/Cr Mice

Strain Code: 564

Learn More

Age in Weeks*	Male Price	Female Price
3 (21-27 days)	54.46	54.46
4 (28-34 days)	58.41	58.41
5 (35-41 days)	62.45	62.45
6 (42-48 days)	66.61	66.61
7 (49-55 days)	70.63	70.63
8 (56-62 days)	74.66	74.66
9-plus	Prices upon request	Prices upon request
Retired breeders	47.44	47.44

** Estimated age*

Nomenclature B6.SJL-*Ptprc*^{a}*Pepc*^{b}/BoyCr

Origin The strain was originally developed at the Sloan Kettering Institute where it was backcrossed onto a nonspecified C57BL/6 strain. The congenic strain "C57BL/6-Ly5.1" carries the allele of the SJL mouse in the *Ptprc* gene locus: "*Ptprc*^{a}" or "CD45.1" or "Ly5.1", which was renamed from "Ly-5.2" in 1987. To NCI via NIAID in 1983. To Charles River in 2014.

Coat Color Black

Research Application Inflammation

MHC Haplotype H2^{b}

BALB/c Mice

Strain Code: 028

Learn More

IGS International Genetic Standardization

Age in Weeks*	Male Price	Female Price
3 (21-27 days)	34.23	36.39
4 (28-34 days)	36.56	37.40
5 (35-41 days)	40.79	39.80
6 (42-48 days)	41.52	40.46
7 (49-55 days)	46.07	43.13
8 (56-62 days)	46.97	44.08
9 (63-69 days)	47.91	44.86
10 (70-76 days)	48.58	45.75
11-plus	Price upon request	Price upon request
Retired breeders	29.27	29.27
Littermates 21 days old	45.13	45.13
Lactating mouse with litter	–	265.79
Timed/Untimed pregnant†	–	238.74

** Estimated age*

† For timed and untimed pregnant, please see our pregnant animal guarantee policy.

Nomenclature BALB/cAnNCrl

Origin H.J. Bagg developed the "Bagg albino" in 1913 from stock from an Ohio pet dealer. Inbred in 1923 by McDowell. To Snell in 1932 at F26, then to Andervont in 1935. To NIH in 1951 from Andervont at F72. To Charles River in 1974 from NIH. IGS refers to animals bred using the Charles River International Genetic Standardization system.

Coat Color White (albino)

Research Application General multipurpose model, hybridoma development, monoclonal antibody production, infectious disease

MHC Haplotype H2^{d}

BALB/c-Elite Mice*†

Strain Code: 547

Learn More

Age in Weeks‡	Male Price	Female Price
3 (21-27 days)	51.75	55.87
4 (28-34 days)	53.71	57.76
5 (35-41 days)	55.15	59.49
6 (42-48 days)	61.22	61.44
7 (49-55 days)	64.11	63.33
8 (56-62 days)	66.90	64.67
9 (63-69 days)	69.01	68.62
10-plus	Price upon request	Price upon request
Retired breeders	44.18	44.18

** Isolator-maintained*
† Information regarding the VAF/Elite® health profile can be found in the research models overview section.
‡ Estimated age

Nomenclature BALB/cAnNCrl

Origin H.J. Bagg developed the "Bagg albino" in 1913 from stock from an Ohio pet dealer. Inbred in 1923 by McDowell. To Snell in 1932 at F26, then to Andervont in 1935. To NIH in 1951 from Andervont at F72. To Charles River in 1974 from NIH.

Coat Color White (albino)

Research Application General multipurpose model, hybridoma development, monoclonal antibody production, infectious disease

MHC Haplotype $H2^d$

C3H Mice

Strain Code: 025

Learn More

Age in Weeks*	Male Price	Female Price
3 (21-27 days)	41.23	42.59
4 (28-34 days)	42.98	44.06
5 (35-41 days)	46.90	46.90
6 (42-48 days)	52.97	50.42
7 (49-55 days)	53.99	51.21
8 (56-62 days)	56.93	55.30
9 (63-69 days)	67.14	56.31
10 (70-76 days)	77.24	60.23
11-plus	Prices upon request	Prices upon request
Retired breeders	33.85	33.85
Littermates 21 days old only	52.40	52.40
Lactating mouse with litter	–	315.03
Timed/Untimed pregnant†	–	269.66

** Estimated age*
† For timed and untimed pregnant, please see our pregnant animal guarantee policy.

Nomenclature C3H/HeNCrl

Origin From a cross of a Bagg albino female and a DBA male by Strong in 1920. A litter of four females and two males sent to Andervont in 1930, then to Heston at F35. To NIH in 1951 from Heston at F57. To Charles River in 1974 from NIH.

Coat Color Agouti (wild-type)

Research Application Safety and efficacy testing, oncology, neurological disorders, retinal degeneration

MHC Haplotype $H2^k$

C57BL/6 Mice*

Strain Code: 027

Learn More

IGS International Genetic Standardization

Age in Weeks†	Male Price	Female Price
3 (21-27 days)	33.73	36.29
4 (28-34 days)	36.56	38.01
5 (35-41 days)	39.51	40.07
6 (42-48 days)	45.41	40.91
7 (49-55 days)	46.19	42.80
8 (56-62 days)	46.69	43.63
9 (63-69 days)	47.86	44.47
10 (70-76 days)	50.03	44.80
11-plus	Prices upon request	Prices upon request
Retired breeders	30.10	29.27
Littermates 21 days old only	43.85	43.85
Lactating mouse with litter	–	337.85
Timed/Untimed pregnant‡	–	300.14

** C57BL/6 mice are raised as age cohorts and shipped as such to minimize aggression, and divided or additional crates may be used to maintain original cohorts. Upon arrival at your facility, we recommend maintaining the housing group to preserve the established hierarchies whenever possible.*

† Estimated age

‡ For timed and untimed pregnant, please see our pregnant animal guarantee policy.

Nomenclature C57BL/6NCrl

Origin Developed by C.C. Little in 1921, from a mating of Miss Abbie Lathrop's stock that also gave rise to strains C57BR and C57L. Strains 6 and 10 separated around 1937. To The Jackson Laboratory from Hall in 1948. To NIH in 1951 from The Jackson Laboratory at F32. To Charles River in 1974 from NIH. IGS refers to animals bred using the Charles River International Genetic Standardization system.

Coat Color Black

Research Application General multipurpose model, diet-induced obesity, trangenic/knockout model development, safety and efficacy testing, immunology

MHC Haplotype $H2^b$

NCI grantees, see our NCI Grantee Models section for an equivalent/alternative model with special NCI grantee pricing.

C57BL/6-Elite Mice*†

Strain Code: 475

Learn More

Age in Weeks‡	Male Price	Female Price
3 (21-27 days)	51.70	56.76
4 (28-34 days)	55.70	61.16
5 (35-41 days)	59.04	62.21
6 (42-48 days)	68.95	63.44
7 (49-55 days)	70.34	64.84
8 (56-62 days)	71.67	66.11
9 (63-69 days)	82.58	66.73
10-plus	Price upon request	Price upon request
Retired breeders	45.02	45.02
Littermates 21 days old only	66.73	66.73
Lactating mouse with litter	–	515.60
Untimed pregnant§	–	343.25

** Isolator-maintained*

† Information regarding the VAF/Elite® health profile can be found in the research models overview section.

‡ Estimated age

§ For untimed pregnant, please see our pregnant animal guarantee policy.

Nomenclature C57BL/6NCrl

Origin Developed by C.C. Little in 1921, from a mating of Miss Abbie Lathrop's stock that also gave rise to strains C57BR and C57L. Strains 6 and 10 separated around 1937. To The Jackson Laboratory from Hall in 1948. To NIH in 1951 from The Jackson Laboratory at F32. To Charles River in 1974 from NIH.

Coat Color Black

Research Application General multipurpose model, diet-induced obesity, transgenic/knockout model development, safety and efficacy testing, immunology

MHC Haplotype $H2^b$

C57BL/6 Aged Mice*

Strain Code: 701

Learn More

Age in Weeks†	Male Price	Female Price
26	100.56	87.93
27	103.62	94.05
28	106.68	100.67
29	109.91	107.18
30	113.19	113.75
31	116.59	117.15
32	120.09	120.65
33	123.66	124.27
34	127.39	128.00
35	131.17	131.84
36	135.11	135.79
37	139.18	139.90
38	143.36	144.08
39	147.69	148.42
40	152.09	152.87
41	156.66	157.44
42	160.56	161.39
43	164.61	165.40
44	168.74	169.56
45	172.90	173.80
46	177.25	178.13
47	181.70	182.58
48	186.21	187.15
49	190.88	191.82
50	195.67	196.61
51	200.51	201.51
52	205.52	206.58
53	210.69	211.75
54	215.97	217.04
55	221.37	222.43
56	226.88	228.00
57	232.56	233.68
58	237.79	238.96
59	243.14	244.36
60	249.20	250.43
61	254.21	255.43
62	259.28	260.56
63	264.45	265.79
64	269.73	271.07
65	275.19	276.53
66	286.26	283.09
67	291.99	287.66
68	297.84	293.44
69	303.80	299.28
70	306.52	305.30
71	314.54	311.37
72	319.21	316.04
73	321.31	320.83
74	324.00	325.61
75	328.89	330.51
76	333.78	335.45
77	335.40	337.07
78-plus	Prices upon request	Prices upon request

** C57BL/6 mice are raised as age cohorts and shipped as such to minimize aggression, and divided or additional crates may be used to maintain original cohorts. Upon arrival at your facility, we recommend maintaining the housing group to preserve the established hierarchies whenever possible.*
† Estimated age

Nomenclature C57BL/6NCrl

Origin Developed by C.C. Little in 1921, from a mating of Miss Abbie Lathrop's stock that also gave rise to strains C57BR and C57L. Strains 6 and 10 separated around 1937. To The Jackson Laboratory from Hall in 1948. To NIH in 1951 from The Jackson Laboratory at F32. To Charles River in 1974 from NIH.

Coat Color Black

Research Application As mice age, they may develop age-related diseases such as cancer, dementia, Alzheimer's, hearing loss, bone density, obesity, and diabetes.

MHC Haplotype $H2^b$

C57BL/6-Germ-Free Mice*†

Strain Code: 574

Learn More

Age in Weeks‡	Male Price	Female Price
3 (21-27 days)	338.16	338.16
4 (28-34 days)	364.13	364.13
5 (35-41 days)	390.16	390.16
6 (42-48 days)	416.20	416.20
7 (49-55 days)	442.17	442.17
8 (56-62 days)	468.20	468.20
9 (63-69 days)	494.23	494.23
10 (70-76 days)	520.20	520.20
11-plus	Price upon request	Price upon request

** Isolator-maintained*
† Specialty model. Discounts may not apply.
‡ Estimated age

Nomenclature C57BL/6NCrl

Origin Developed by C.C. Little in 1921, from a mating of Miss Abbie Lathrop's stock that also gave rise to strains C57BR and C57L. Strains 6 and 10 separated around 1937. To The Jackson Laboratory from Hall in 1948. To NIH in 1951 from The Jackson Laboratory at F32. To Charles River in 1974 from NIH.

Coat Color Black

Research Application Host-microbiome interactions, effects of dysbiosis, influence of microbiota, a caesarean and embryo-transfer rederivation

MHC Haplotype $H2^b$

Germ-free mice are an indispensable model for research into the host-microbiome interaction, which has been shown to play a crucial role in homeostasis of animal physiology, metabolism, immunity, and more. Imbalances of the microbiome, termed dysbiosis, have been linked to a wide and growing array of disease states, including type 1 diabetes, inflammatory bowel disease, obesity, and autism. To explore the influence of microbiota, germ-free mice can be compared to standard SPF mice or associated with a defined or complex microbiota, derived from humans as well as animals. In addition, germ-free mice can be used for a caesarean and embryo-transfer rederivation of mutant mouse models.

DBA/2 Mice

Strain Code: 026

Learn More

Age in Weeks*	Male Price	Female Price
3 (21-27 days)	52.17	49.34
4 (28-34 days)	55.13	57.73
5 (35-41 days)	59.37	58.86
6 (42-48 days)	60.51	59.89
7 (49-55 days)	66.40	60.97
8 (56-62 days)	67.60	63.86
9 (63-69 days)	68.79	64.42
10 (70-76 days)	76.11	65.05
11-plus	Price upon request	Price upon request
Retired breeders	40.88	40.88
Littermates 21 days old only	56.37	56.37
Lactating mouse with litter	–	330.34
Timed/Untimed pregnant†	–	288.14

** Estimated age*
† For timed and untimed pregnant, please see our pregnant animal guarantee policy.

Nomenclature DBA/2NCrl

Origin Developed by C.C. Little in 1909 from stock segregating for coat color. Oldest of all the inbred strains of mice. In 1929-1930, crosses were made between sublines and several new sublines were established, including the widely used sublines 1 (previously called 12) and 2 (previously called 212). To Mider in 1938. To NIH in 1951 from Mider at F34. To Charles River in 1974 from NIH.

Coat Color Non-agouti, dilute brown

Research Application Safety and efficacy testing, immunology, audiogenic seizures

MHC Haplotype $H2^d$

FVB Mice

Strain Code: 207

Learn More

Age in Weeks*	Male Price	Female Price
3-4 (21-34 days)	38.62	42.25
5-6 (35-48 days)	44.75	48.55
7-8 (49-62 days)	53.14	55.97
9-10 (63-76 days)	63.00	65.67
11-12 (77-90 days)	72.59	74.07
13-plus	Price upon request	Price upon request
Retired breeders	31.42	31.42
Timed/Untimed pregnant†	–	351.03

** Estimated age*
† For timed and untimed pregnant, please see our pregnant animal guarantee policy.

Nomenclature FVB/NCrl

Origin Derived in 1935 from an outbred Swiss colony [N:GP(S)] at NIH. In the early 1970s, while being established as an inbred strain, sensitivity to Friend leukemia virus B strain was discovered. At this time, inbreeding of this line for the Fv1b allele was undertaken and the strain was called FVB. To Charles River from NIH in 1994.

Coat Color White (albino)

Research Application Transgenic/knockout model development

MHC Haplotype $H2^q$

NCI grantees, see our NCI Grantee Models section for an equivalent/alternative model with special NCI grantee pricing.

SJL-Elite Mice*†

Strain Code: 478

Learn More

Age in Weeks‡	Male Price	Female Price
3 (21-27 days)	42.48	45.71
4 (28-34 days)	45.37	48.15
5 (35-41 days)	47.93	54.67
6 (42-48 days)	50.76	55.35
7 (49-55 days)	53.25	58.24
8-plus	Price upon request	Price upon request
Retired breeders	36.69	36.69
Littermates 21 days old only	48.65	48.65
Lactating mouse with litter	–	342.30
Untimed pregnant§	–	294.77

** Isolator-maintained*
† Information regarding the VAF/Elite® health profile can be found in the research models overview section.
‡ Estimated age
§ For untimed pregnant, please see our pregnant animal guarantee policy.

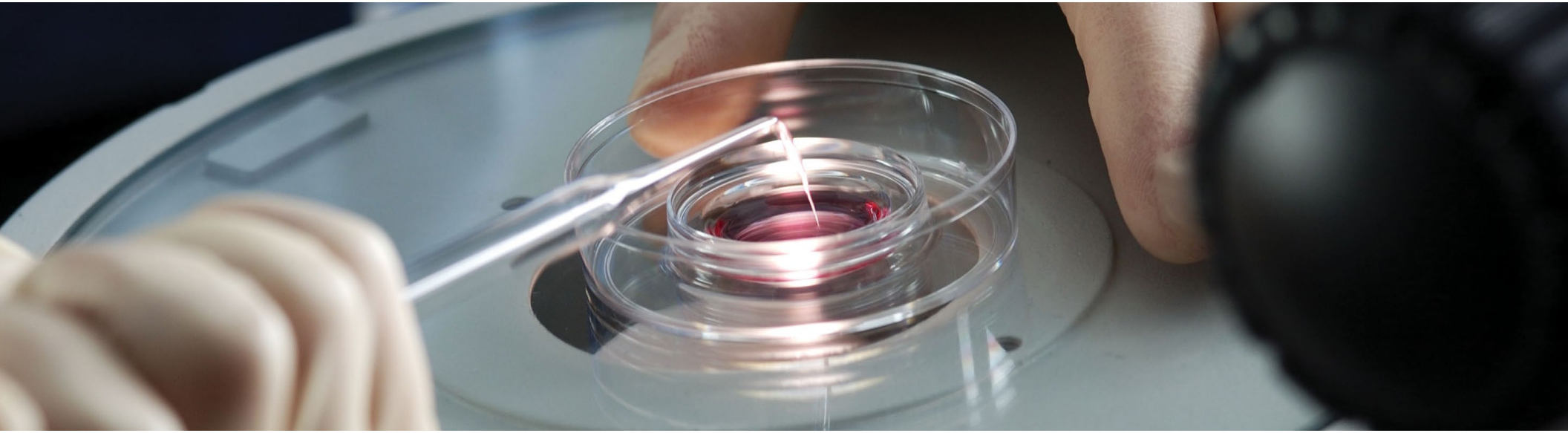
Nomenclature SJL/JOrlIcoCrl

Origin Selected by James Lambert in 1955 from three different strains of Swiss Webster brought to Jackson Laboratory between 1938 and 1943. This strain was introduced to CNRS-CSEAL, Orléans, France in 1978 and acquired by Iffa Credo in 1990 at F114. To Charles River from Iffa Credo in 1997.

Coat Color White (albino)

Research Application Immunology, retinal degeneration, transgenic/knockout model development

MHC Haplotype $H2^s$



Cryopreserved

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Common Name	Nomenclature	Coat Color
NCI A/JCr	A/JCr	White (albino)

Hybrid Mouse Models

CB6F1 Mice

Origin A cross between female BALB/c and male C57BL/6.

B6C3F1 Mice

Strain Code: 031

Learn More

Age in Weeks*	Male Price	Female Price
3 (21-27 days)	40.18	43.91
4 (28-34 days)	43.27	45.31
5 (35-41 days)	51.84	50.03
6 (42-48 days)	56.98	50.03
7 (49-55 days)	67.76	50.03
8 (56-62 days)	72.36	50.03
9-plus	Price upon request	Price upon request
Littermates 21 days old only	54.64	54.64

** Estimated age*

Nomenclature B6C3F1/Crl

Origin A cross between female C57BL/6 and male C3H.

Coat Color Agouti (wild-type)

Research Application Safety and efficacy testing, transgenic/knockout model development, transplantation research

B6D2F1 Mice

when ordering, specify BDF1

Strain Code: 099

Learn More

Age in Weeks*	Male Price	Female Price
3 (21-27 days)	37.79	41.11
4 (28-34 days)	42.34	43.04
5 (35-41 days)	50.74	45.01
6 (42-48 days)	56.10	48.29
7 (49-55 days)	65.90	48.29
8 (56-62 days)	76.28	48.29
9-plus	Price upon request	Price upon request
Littermates 21 days old only	54.24	54.24

** Estimated age*

Nomenclature B6D2F1/Crl

Origin A cross between female C57BL/6 and male DBA/2.

Coat Color Black

Research Application Safety and efficacy testing, transgenic/knockout model development, transplantation research, behavioral research

NCI grantees, see our NCI Grantee Models section for an equivalent/alternative model with special NCI grantee pricing.

CB6F1 Mice

Strain Code: 176

Learn More

Age in Weeks*	Male Price	Female Price
3 (21-27 days)	41.41	46.13
4 (28-34 days)	42.58	47.29
5 (35-41 days)	44.32	50.91
6 (42-48 days)	46.82	50.91
7 (49-55 days)	46.82	50.91
8 (56-62 days)	52.89	50.91
9-plus	Price upon request	Price upon request
Littermates 21 days old only	54.29	54.29

** Estimated age*

Nomenclature CB6F1/Crl

Origin A cross between female BALB/c and male C57BL/6.

Coat Color Agouti

Research Application Transplantation research, monoclonal antibody production

CD2F1 Mice

when ordering, specify CDF1

Strain Code: 033

Learn More

Age in Weeks*	Male Price	Female Price
3 (21-27 days)	42.10	43.80
4 (28-34 days)	46.71	45.43
5 (35-41 days)	46.71	47.24
6 (42-48 days)	53.48	50.32
7 (49-55 days)	53.48	50.32
8 (56-62 days)	53.48	50.32
9-plus	Price upon request	Price upon request
Littermates 21 days old only	57.67	57.67

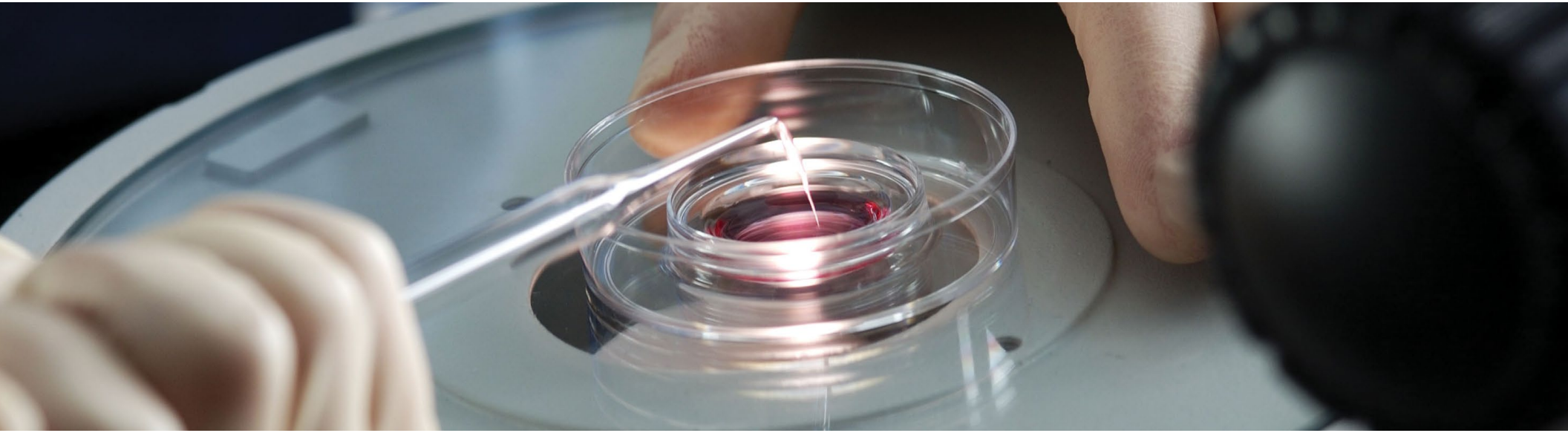
** Estimated age*

Nomenclature CD2F1/Crl

Origin A cross between female BALB/c and male DBA/2.

Coat Color Brown agouti

Research Application Safety and efficacy testing, transplantation research, monoclonal antibody



Cryopreserved

All strains listed below are currently maintained as cryopreserved models. **Please allow a minimum of 12-15 weeks for delivery.** A dedicated supply can be established for large orders, and breeding pairs may be available for select models. Contact our Customer Service Department at ResearchModels@crl.com for pricing and availability.

Common Name	Nomenclature	Coat Color	Therapeutic Area
THE POUND MOUSE®	C57BL/6NCrl-*Lepr*$^{db\text{-}Ib}$/Crl	Black	Diabetes

Specialty Models

Sprague Dawley® Rat

Origin To SASCO from ARS/Sprague Dawley in 1979. To Charles River in 1996.

Sprague Dawley® Rats*

when ordering, specify SAS SD

Strain Code: 400

Learn More

Weight in Grams	Male Price	Female Price
Up to 50	25.72	25.16
51-75	29.51	30.81
76-100	34.54	36.78
101-125	39.71	40.20
126-150	42.62	46.84
151-175	48.21	51.25
176-200	53.68	56.48
201-225	59.95	61.26
226-250	64.06	65.80
251-275	67.23	–
276-300	73.06	–
301-325	76.23	–
326-plus	Price upon request	Price upon request
Retired breeders	53.74	52.69
Littermates 21 days old	30.63	30.63
Lactating rat with litter	–	176.88
Timed pregnant†	–	170.36
Untimed pregnant†	–	136.31

** Specialty model. Discounts may not apply.*
† For timed and untimed pregnant SAS SD rats, determination of pregnancy is by observation of vaginal plug. Plug date is considered to be day zero of gestation. Please see our pregnant animal guarantee policy.

Nomenclature Crl:SD

Origin To SASCO from ARS/Sprague Dawley in 1979. To Charles River in 1996.

Coat Color White (albino)

Research Application General multipurpose model, safety and efficacy testing, aging, nutrition, diet-induced obesity, oncology

Sprague Dawley® is a registered trademark of Envigo Holding Inc.

F344 Rats*

when ordering, specify SAS FISCH

Strain Code: 403

Learn More

Age in Weeks†	Male Price	Female Price
3 (21-27 days)	50.39	53.61
4 (28-34 days)	57.41	53.61
5 (35-41 days)	63.87	60.45
6 (42-48 days)	72.75	69.08
7 (49-55 days)	91.09	77.35
8 (56-62 days)	93.94	77.35
9 (63-69 days)	98.79	78.28
10-plus	Price upon request	Price upon request
Retired breeders	67.73	65.73
Littermates 21 days old	107.37	107.37
Lactating rat with litter	–	415.89
Timed pregnant‡	–	198.57
Untimed pregnant‡	–	160.92

** Specialty model. Discounts may not apply.*
† Estimated age
‡ For timed and untimed pregnant F344 rats, determination of pregnancy is by observation of vaginal plug. Plug date is considered to be day zero of gestation. Please see our pregnant animal guarantee policy.

Nomenclature F344/NCrl

Origin Derived from NIH stock in 1992 by SASCO. To Charles River in 1996.

Coat Color White (albino)

Research Application General multipurpose model, aging, safety and efficacy testing, surgical model, oncology, nutrition

MHC Haplotype RT1^{lv}

SRG Rats

Strain Code: 707

Learn More

Age in Weeks*	Male Price	Female Price
3 (21-27 days)	384.04	384.04
4 (28-34 days)	400.58	400.58
5 (35-41 days)	417.11	417.11
6 (42-48 days)	433.65	433.65
7 (49-55 days)	450.19	450.19
8 (56-62 days)	466.73	466.73
9 (63-69 days)	483.26	483.26
10 (70-76 days)	499.80	499.80
11 (77-83 days)	516.34	516.34
12 (84-90 days)	532.88	532.88
13 (91-97 days)	549.41	549.41
14 (98-104 days)	565.95	565.95

**Estimated age*

Nomenclature Sprague Dawley-*Rag2*^{em2hera} *Il2rg*^{em1hera}/HblCrl

Origin To Charles River from Hera Biolabs in 2021. The SRG (Sprague Dawley, Rag2, Il2rg- "SRG") is a severely immunodeficient inbred rat created through knockout mutations in the *Rag2* and *Il2rgamma* genes, resulting in a deficiency in mature B, T, and NK cells.

Coat Color White

Research Application Tumor biology, oncology, immunology, xenograft transplant research, infectious disease

Commercial use of the SRG may be further subject to Hera Biolabs' Conditions of Use.

The SRG is eligible for our Animal Model Evaluation program.

C57BL/6 Aged Mice*

Strain Code: 701

Learn More

Age in Weeks†	Male Price	Female Price
26	100.56	87.93
27	103.62	94.05
28	106.68	100.67
29	109.91	107.18
30	113.19	113.75
31	116.59	117.15
32	120.09	120.65
33	123.66	124.27
34	127.39	128.00
35	131.17	131.84
36	135.11	135.79
37	139.18	139.90
38	143.36	144.08
39	147.69	148.42
40	152.09	152.87
41	156.66	157.44
42	160.56	161.39
43	164.61	165.40
44	168.74	169.56
45	172.90	173.80
46	177.25	178.13
47	181.70	182.58
48	186.21	187.15
49	190.88	191.82
50	195.67	196.61
51	200.51	201.51
52	205.52	206.58
53	210.69	211.75
54	215.97	217.04
55	221.37	222.43
56	226.88	228.00
57	232.56	233.68
58	237.79	238.96
59	243.14	244.36
60	249.20	250.43
61	254.21	255.43
62	259.28	260.56
63	264.45	265.79
64	269.73	271.07
65	275.19	276.53
66	286.26	283.09
67	291.99	287.66
68	297.84	293.44
69	303.80	299.28
70	306.52	305.30
71	314.54	311.37
72	319.21	316.04
73	321.31	320.83
74	324.00	325.61
75	328.89	330.51
76	333.78	335.45
77	335.40	337.07

** C57BL/6 mice are raised as age cohorts and shipped as such to minimize aggression, and divided or additional crates may be used to maintain original cohorts. Upon arrival at your facility, we recommend maintaining the housing group to preserve the established hierarchies whenever possible.*
† Estimated age

Nomenclature C57BL/6NCrl

Origin Developed by C.C. Little in 1921, from a mating of Miss Abbie Lathrop's stock that also gave rise to strains C57BR and C57L. Strains 6 and 10 separated around 1937. To The Jackson Laboratory from Hall in 1948. To NIH in 1951 from The Jackson Laboratory at F32. To Charles River in 1974 from NIH.

Coat Color Black

Research Application As mice age, they may develop age-related diseases such as cancer, dementia, Alzheimer's, hearing loss, bone density, obesity, and diabetes.

MHC Haplotype $H2^b$

C57BL/6-Germ-Free Mice*†

Strain Code: 574

Learn More

Age in Weeks‡	Male Price	Female Price
3 (21-27 days)	338.16	338.16
4 (28-34 days)	364.13	364.13
5 (35-41 days)	390.16	390.16
6 (42-48 days)	416.20	416.20
7 (49-55 days)	442.17	442.17
8 (56-62 days)	468.20	468.20
9 (63-69 days)	494.23	494.23
10 (70-76 days)	520.20	520.20
11-plus	Price upon request	Price upon request

** Isolator-maintained*
† Specialty model. Discounts may not apply.
‡ Estimated age

Nomenclature C57BL/6NCrl

Origin Developed by C.C. Little in 1921, from a mating of Miss Abbie Lathrop's stock that also gave rise to strains C57BR and C57L. Strains 6 and 10 separated around 1937. To The Jackson Laboratory from Hall in 1948. To NIH in 1951 from The Jackson Laboratory at F32. To Charles River in 1974 from NIH.

Coat Color Black

Research Application Host-microbiome interactions, effects of dysbiosis, influence of microbiota, a caesarean and embryo-transfer rederivation

MHC Haplotype $H2^b$

Germ-free mice are an indispensable model for research into the host-microbiome interaction, which has been shown to play a crucial role in homeostasis of animal physiology, metabolism, immunity, and more. Imbalances of the microbiome, termed dysbiosis, have been linked to a wide and growing array of disease states, including type 1 diabetes, inflammatory bowel disease, obesity, and autism. To explore the influence of microbiota, germ-free mice can be compared to standard SPF mice or associated with a defined or complex microbiota, derived from humans as well as animals. In addition, germ-free mice can be used for a caesarean and embryo-transfer rederivation of mutant mouse models.

NCG Mice*†

Strain Code: 572

Learn More

Commercial Pricing

Age in Weeks‡	Male Price	Female Price
3-4 (21-34 days)	211.81	253.38
5 (35-41 days)	215.87	257.32
6 (42-48 days)	219.87	261.33
7 (49-55 days)	223.88	265.40
8 (56-62 days)	227.83	269.40
9 (63-69 days)	231.89	273.41
10 (70-76 days)	235.84	277.47
11-plus	Price upon request	Price upon request

Non-Profit/Academic Pricing

Age in Weeks‡	Male Price	Female Price
3-7 (21-55 days)	86.81	113.69
8 (56-62 days)	92.60	119.14
9 (63-69 days)	98.39	121.54
10 (70-76 days)	104.18	127.83
11-plus	Price upon request	Price upon request

** Coisogenic, isolator-maintained*
† Specialty model. Discounts may not apply.
‡ Estimated age

Nomenclature NOD-*Prkdc*^{em26Cd52}Il2rg^{em26Cd22}/NjuCrl

Origin 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 sequential CRISPR/Cas9 editing of the *Prkdc* and *Il2rg* loci in the NOD/Nju mouse, generating a mouse coisogenic to the NOD/Nju. The NOD/Nju carries a mutation in the *Sirpa* (*SIRP* α) gene that allows for engrafting of foreign hematopoietic stem cells. The *Prkdc* knockout generates a SCID-like phenotype lacking proper T-cell and B-cell formation. The knockout of the *Il2rg* gene further exacerbates the SCID-like phenotype while additionally resulting in a decrease of NK cell production.

Coat Color White (albino)

Research Application Oncology, immunology, infectious disease, graft-versus-host disease (GvHD), diabetes, regenerative medicine, human organ transplantation

hACE2-NCG Mice*†

Strain Code: 706

Learn More

Commercial Pricing

Male	Female
Price	Price
Please inquire	Please inquire

Non-Profit/Academic Pricing

Male	Female
Price	Price
Please inquire	Please inquire

** Coisogenic, cyropreserved, please inquire about availability.*
† Specialty model. Discounts may not apply.

Nomenclature NOD/ShiLtJGpt-*Prkdc*^{em26Cd52}*IL2rg*^{em26Cd22}*Ace2*$^{em1Cin(hACE2)}$/GptCRL

Origin This humanized knock-in model (NOD/ShiLtJGpt-*Prkdc*^{em26Cd52}*IL2rg*^{em26Cd22}*Ace2*$^{em1Cin(hACE2)}$/GptCRL) was developed by GemPharmatech Co., Ltd. on an immunodeficient NCG mouse background (Charles River Strain 572) in Nanjing, PRC. The colony was established In October 2020 from embryo reconstitution in Wilmington, MA. The mouse strain was created through knock-out/knock-in of *hACE2* designed to express full length *hACE2* under control of the mouse *Ace2* locus promoter.

Description The hACE2-NCG mouse was designed to support critical translational research intended to mimic various human immune responses following exposure to SARS-CoV-2. Through the engraftment of human cells, part of the immune system can be reconstituted prior to SARSCoV- 2 infection. The advantage of studying SARS-CoV-2 infections through human reconstitution could allow for the development of models used to study the mechanisms of different immune cells during infection.

Coat Color White (albino)

Research Application Humanized NCG mouse model for SARS-CoV-2 and infectious disease research

MHC Haplotype $H2^b$

Note hACE2 transgenic colonies are tested for detection of SARS-CoV-2

Coming in 2023 NCG Plus Portfolio

Charles River is bringing cutting-edge research models to market to accelerate the development of novel therapeutics. The NCG derivative product line is a comprehensive portfolio of immunodeficient research models that are ideal for preclinical research using human cells and tissue xenografts. These models will allow for modification of additional study parameters expanding the scope of humanized research. The mice can be reconstituted with human immune cells using human peripheral blood mononuclear cells (PBMCs) or human hematopoietic stem cells (HSCs). Check out the link below for more details and regularly updated information as each of these models become available.

Learn More

NCG/PBMC Select Humanization Kit*†

Learn More

Commercial Pricing

Age in Weeks‡	Male Price (per mouse)	Female Price (per mouse)
3-4 (21-34 days)	297.65	339.22
5 (35-41 days)	301.71	343.17
6 (42-48 days)	305.71	347.18
7 (49-55 days)	309.73	351.24
8 (56-62 days)	313.67	355.24
9 (63-69 days)	317.74	359.25
10 (70-76 days)	321.69	363.32
11-plus	Price upon request	Price upon request

Academic Pricing

Age in Weeks‡	Male Price (per mouse)	Female Price (per mouse)
3-7 (21-55 days)	172.65	199.53
8 (56-62 days)	178.44	204.98
9 (63-69 days)	184.23	207.38
10 (70-76 days)	190.02	213.67
11-plus	Price upon request	Price upon request

** The kit is made up of five mice and one vial of 50 million PBMCs or 10 mice and one vial of 100 million PBMCs.*
† Shipping of PBMCs is not included in the kit price. Pricing shown is price per mouse.
‡ Estimated age

Description: NCG/PBMC kit allows for the humanization of NCG mice using select human PBMCs. The kit comes with mice and PBMCs and allows for flexibility when planning a study and injecting cells.

Note: Ordering cells requires a corresponding order for NCG mice.

Benefits

Study-Ready

Peripheral blood mononuclear cells (PBMCs) from multiple donors are pretested for engraftment and study performance in the NCG mouse model.

Time and Cost Efficient

Pre-screened PBMCs from multiple donors eliminate the time and labor of donor qualification, accelerating results and reducing engraftment variability.

Diverse Donor Cell Choice

Ready-to-use PBMCs from a diverse pool of reliable human donors enable consistent research, study-to-study, across multiple human subjects.

In Vitro to *In Vivo* Translation

Availability of cells and animals enables clients to translate studies from *in vitro* assays to an *in vivo* human T cell model with the same donor PBMCs.

HuPBMC-NCG Mice*†

Learn More

Commercial Pricing

Age in Weeks‡	Male Price	Female Price
3-4 (21-34 days)	547.56	589.13
5 (35-41 days)	551.62	593.07
6 (42-48 days)	555.62	597.08
7 (49-55 days)	559.63	601.15
8 (56-62 days)	563.58	605.15
9 (63-69 days)	567.64	609.16
10 (70-76 days)	571.59	613.22
11-plus	Price upon request	Price upon request

Academic Pricing

Age in Weeks‡	Male Price	Female Price
3-7 (21-55 days)	422.56	449.44
8 (56-62 days)	428.35	454.89
9 (63-69 days)	434.14	457.29
10 (70-76 days)	439.93	463.58
11-plus	Price upon request	Price upon request

** A minimum of five mice per order is required, then in increasing increments of five animals.*
† Price includes the cost of the NCG mouse and PBMC injections, as well as the cost associated with the procedure.
‡ Estimated age

Description: The humanized peripheral blood mononuclear cells (PBMCs) model consists of isolated human PBMCs injected into NCG mice. Animals are shipped 3-5 days post injection.

Benefits

Convenient

Ready-to-use PBMCs are pre-injected and tested for effective engraftment in the NCG mouse model.

Trusted Source

The engrafted NCG mouse is a result of a partnership between industry leaders with more than 100 years of combined experience in providing high-quality animal models and human biologics to the research industry.

Quality

PBMC 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.

Efficient

Pre-screened PBMCs save time, labor, and costs associated with donor qualification. There are no license requirements.

HuCD34-NCG Mice*

Strain Code: 695

Learn More

Commercial Pricing

Female
Price
1196.48

Academic Pricing

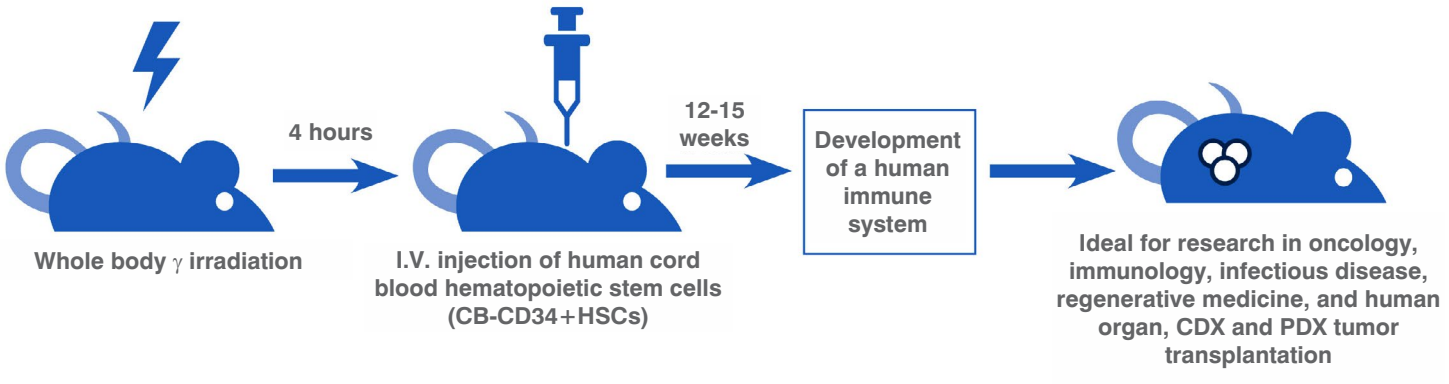
Female
Price
973.88

** HuCD34-NCG male mice are available by custom request only.*

Charles River is offering the study-ready HuCD34-NCG mouse model with a human-like immune system.

Benefits

NCG (NOD-*Prkdc*^{em26Cd52}*Il2rg*^{em26Cd22}/NjuCrl) are humanized by adoptive transfer of human CD34^{+} stem cells from a qualified source. After injection, animals are housed for 12-15 weeks of maintenance according to the Charles River immunodeficient animal housing protocols until > 25% of peripheral blood leukocytes are human immune cells.



Immunodeficient Models

Oncology is one of the leading areas of research into new therapeutics. The Charles River global portfolio of high-quality immunodeficient models gives you the benefit of partnering with an industry leader offering an infrastructure capable of advancing your research now and in the future.

Overview of Characteristics

Characteristic	Athymic Nude	Fox Chase SCID®	Fox Chase SCID® Beige	NCG/NCG Plus	NOD SCID	BALB/c Nude
Strain Code	490 (Homozygous) 491 (Heterozygous)	236	250	572	394	194 (Homozygous) 195 (Heterozygous)
Hair Coat	No	Yes	Yes	Yes*	Yes	No
T Cell Deficient	Yes	Yes	Yes	Yes	Yes	Yes
B Cell Deficient	No	Yes	Yes	Yes	Yes	No
NK Cell Deficient	No	No	Impaired	Yes	Impaired	No
Species	Mouse	Mouse	Mouse	Mouse	Mouse	Mouse
Genetics	Outbred	Congenic	Congenic	Coisogenic	Congenic	Inbred

** NCG Plus hairless model coming in 2023*

Characteristic	CD-1® Nude	NIH-III Nude	NU/NU Nude	RNU Nude	SRG	SHO™	NCI SCID/NCr
Strain Code	086 (Homozygous) 087 (Heterozygous)	201 (Homozygous) 202 (Heterozygous)	088 (Homozygous) 089 (Heterozygous)	316 (Homozygous) 118 (Heterozygous)	707	474	561
Hair Coat	No	No	No	No	Yes	No	Yes
T Cell Deficient	Yes	Yes	Yes	Yes	Yes	Yes	Yes
B Cell Deficient	No	Yes	No	No	Yes	Yes	Yes
NK Cell Deficient	No	Impaired	No	No	Yes	No	No
Species	Mouse	Mouse	Mouse	Rat	Rat	Mouse	Mouse
Genetics	Outbred	Outbred	Outbred	Outbred	Inbred	Outbred	Congenic

Athymic Nude Mice*

Strain Code: 490 (Homozygous), 491 (Heterozygous)†

Learn More

Age in Weeks‡	Male Quantity and Pricing 1-100
3-5 (21-41 days)	100.56
6-7 (42-55 days)	111.52
8 (56-62 days)	126.71
9-plus	Price upon request

Age in Weeks‡	Female Quantity and Pricing 1-100
3-5 (21-41 days)	116.87
6-7 (42-55 days)	129.66
8 (56-62 days)	146.80
9-plus	Price upon request

** Outbred, isolator-maintained*
† Heterozygous (haired) animals are not immunodeficient. Call 1.800.522.7287 for pricing and availability.
‡ Estimated age

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. It 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.

Coat Color Hairless, albino background

Research Application Tumor biology and xenograft research

NCI grantees, see our NCI Grantee Models section for an equivalent/alternative model with special NCI grantee pricing.

Fox Chase SCID® Mice*

when ordering, specify CB17 SCID

Strain Code: 236

Learn More

Age in Weeks†	Male Price	Female Price
3 (21-27 days)	111.30	111.30
4 (28-34 days)	119.04	119.04
5 (35-41 days)	127.32	127.32
6 (42-48 days)	134.06	134.06
7 (49-55 days)	141.74	141.74
8-plus	Price upon request	Price upon request

** Congenic, isolator-maintained*
† Estimated age

Nomenclature CB17/Icr-*Prkdc*^{scid}/IcrIcoCrl

Origin SCID mice possess a genetic autosomal recessive mutation (scid). Discovered in 1980 by Bosma in C.B-17/Icr 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 an Iffa Credo foundation colony.

Coat Color White (albino)

Research Application Tumor biology and xenograft research

Fox Chase SCID® is a registered trademark of Fox Chase Cancer Center.

NCI grantees, see our NCI Grantee Models section for an equivalent/alternative model with special NCI grantee pricing.

Fox Chase SCID® Beige Mice*

Strain Code: 250

Learn More

Age in Weeks†	Male Price	Female Price
3 (21-27 days)	116.87	118.03
4 (28-34 days)	123.71	124.94
5 (35-41 days)	131.78	131.78
6 (42-48 days)	139.13	139.13
7 (49-55 days)	145.97	145.97
8-plus	Price upon request	Price upon request

** Congenic, isolator-maintained*
† Estimated age

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.

Coat Color White (albino)

Research Application Tumor biology and xenograft research

Fox Chase SCID® is a registered trademark of Fox Chase Cancer Center.

NCG Mice*†

Strain Code: 572

Learn More

Commercial Pricing

Age in Weeks‡	Male Price	Female Price
3-4 (21-34 days)	211.81	253.38
5 (35-41 days)	215.87	257.32
6 (42-48 days)	219.87	261.33
7 (49-55 days)	223.88	265.40
8 (56-62 days)	227.83	269.40
9 (63-69 days)	231.89	273.41
10 (70-76 days)	235.84	277.47
11-plus	Price upon request	Price upon request

Non-Profit/Academic Pricing

Age in Weeks‡	Male Price	Female Price
3-7 (21-55 days)	86.81	113.69
8 (56-62 days)	92.60	119.14
9 (63-69 days)	98.39	121.54
10 (70-76 days)	104.18	127.83
11-plus	Price upon request	Price upon request

** Coisogenic, isolator-maintained*
† Specialty model. Discounts may not apply.
‡ Estimated age

Nomenclature NOD-*Prkdc*^{em26Cd52}*Il2rg*^{em26Cd22}/NjuCrl

Origin 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 sequential CRISPR/Cas9 editing of the *Prkdc* and loci in the NOD/Nju mouse, generating a mouse coisogenic to the NOD/Nju. The NOD/Nju carries a mutation in the *Sirpa* (*SIRP* α) gene that allows for engrafting of foreign hematopoietic stem cells. The *Prkdc* knockout generates a SCID-like phenotype lacking proper T cell and B cell formation. The knockout of the *Il2rg* gene further exacerbates the SCID-like phenotype while additionally resulting in a decrease of NK cell production.

Coat Color White (albino)

Research Application Oncology, immunology, infectious disease, graft-versus-host disease (GvHD), diabetes, regenerative medicine, human organ transplantation

hACE2-NCG Mice*†

Strain Code: 706

Learn More

Commercial Pricing

Male	Female
Price	**Price**
Please inquire	Please inquire

Non-Profit/Academic Pricing

Male	Female
Price	**Price**
Please inquire	Please inquire

** Coisogenic, cyropreserved, please inquire about availability.*
† Specialty model. Discounts may not apply.

Nomenclature NOD/ShiLtJGpt-*Prkdc*^{em26Cd52}*IL2rg*^{em26Cd22}*Ace2*$^{em1Cin(hACE2)}$/GptCRL

Origin This humanized knock-in model (NOD/ShiLtJGpt-*Prkdc*^{em26Cd52}*IL2rg*^{em26Cd22}*Ace2*$^{em1Cin(hACE2)}$/GptCRL) was developed by GemPharmatech Co., Ltd. on an immunodeficient NCG mouse (Charles River Strain 572) in Nanjing, PRC. The colony was established In October 2020 from embryo reconstitution in Wilmington, MA. The mouse strain was created through knock-out/knock-in of *hACE2* designed to express full length *hACE2* under control of the mouse *Ace2* locus promoter.

Coat Color White (albino)

Description The hACE2-NCG mouse was designed to support critical translational research intended to mimic various human immune responses following exposure to SARS-CoV-2. Through the engraftment of human cells, part of the immune system can be reconstituted prior to SARSCoV- 2 infection. The advantage of studying SARS-CoV-2 infections through human reconstitution could allow for the development of models used to study the mechanisms of different immune cells during infection.

Research Application Humanized NCG mouse model for SARS-CoV-2 and infectious disease research

MHC Haplotype $H2^b$

Note hACE2 transgenic colonies are tested for detection of SARS-CoV-2

Coming in 2023 NCG Plus Portfolio

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Learn More

NCG/PBMC Select Humanization Kit*†

Learn More

Commercial Pricing

	Male	Female
Age in Weeks‡	Price (per mouse)	Price (per mouse)
3-4 (21-34 days)	297.65	339.22
5 (35-41 days)	301.71	343.14
6 (42-48 days)	305.71	347.18
7 (49-55 days)	309.73	351.24
8 (56-62 days)	313.67	355.24
9 (63-69 days)	317.74	359.25
10 (70-76 days)	321.69	363.32
11-plus	Price upon request	Price upon request

Non-Profit/Academic Pricing

	Male	Female
Age in Weeks‡	Price (per mouse)	Price (per mouse)
3-7 (21-55 days)	172.65	199.53
8 (56-62 days)	178.44	204.98
9 (63-69 days)	184.23	207.38
10 (70-76 days)	190.02	213.67
11-plus	Price upon request	Price upon request

** The kit is made up of five mice and one vial of 50 million PBMCs or 10 mice and one vial of 100 million PBMCs.*
† Shipping of PBMCs is not included in the kit price. Pricing shown is price per mouse.
‡ Estimated age

Description: NCG/PBMC kit allows for the humanization of NCG mice using select human PBMCs. The kit comes with mice and PBMCs and allows for flexibility when planning a study and injecting cells.

Note: Ordering cells requires a corresponding order for NCG mice.

Benefits

Study-Ready

Peripheral Blood mononuclear cells (PBMCs) from multiple donors are pretested for engraftment and study performance in the NCG mouse model.

Time and Cost Efficient

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In Vitro to *In Vivo* Translation

Availability of cells and animals enables clients to translate studies from *in vitro* assays to an *in vivo* human T cell model with the same donor PBMCs.

HuPBMC-NCG Mice*†

Learn More

Commercial Pricing

	Male	Female
Age in Weeks‡	Price	Price
3-4 (21-34 days)	547.56	589.13
5 (35-41 days)	551.62	593.07
6 (42-48 days)	555.62	597.08
7 (49-55 days)	559.63	601.15
8 (56-62 days)	563.58	605.15
9 (63-69 days)	567.64	609.16
10 (70-76 days)	571.59	613.22
11-plus	Price upon request	Price upon request

Non-Profit/Academic Pricing

	Male	Female
Age in Weeks‡	Price	Price
3-7 (21-55 days)	422.56	449.44
8 (56-62 days)	428.35	454.89
9 (63-69 days)	434.14	457.29
10 (70-76 days)	439.93	463.58
11-plus	Price upon request	Price upon request

** A minimum of five mice per order is required, then in increasing increments of five animals.*
† Price includes the cost of the NCG mouse and PBMC injections, as well as the cost associated with the procedure.
‡ Estimated age

Description: The humanized peripheral blood mononuclear cells (PBMCs) model consists of isolated human PBMCs injected into NCG mice. Animals are shipped 3-5 days post injection.

Benefits

Convenient

Ready-to-use PBMCs are pre-injected and tested for effective engraftment in the NCG mouse model.

Trusted Source

The engrafted NCG mouse is a result of a partnership between industry leaders with more than 100 years of combined experience in providing high-quality animal models and human biologics to the research industry.

Quality

PBMC 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.

Efficient

Pre-screened PBMCs save time, labor, and costs associated with donor qualification. There are no license requirements.

HuCD34-NCG Mice*

Strain Code: 695

Learn More

Commercial Pricing

Female
Price
1196.48

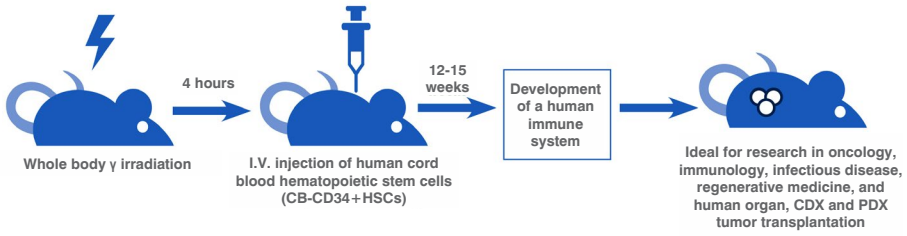
Non-Profit/Academic Pricing

Female
Price
973.88

** HuCD34-NCG male mice are available by custom request only.*

Charles River is offering the study-ready HuCD34-NCG mouse model with a human-like immune system.

Description: NOD-*Prkdc*^{em26Cd52}*Il2rgem*^{26Cd22}/NjuCrl are humanized by adoptive transfer of human CD34+ stem cells from a qualified source, following myeloablation. Animals are subsequently housed for 12-14 weeks according to Charles River immunodeficient animal housing protocols allowing for stable engraftment of the human CD34+ stem cells. Humanization is confirmed using flow cytometry and animals are available for purchase.



NOD SCID Mice*

Strain Code: 394

Learn More

Age in Weeks†	Male Price	Female Price
3-5 (21-41 days)	164.50	174.41
6-7 (42-55 days)	177.91	192.43
8-plus	Price upon request	Price upon request

** Congenic, isolator-maintained*
† Estimated age

Nomenclature NOD.CB17-*Prkdc*^{scid}/NCrCrl

Origin The SCID mutation has been transferred onto a non-obese diabetic background. Animals homozygous for the SCID mutation have impaired T and B cell lymphocyte development. The NOD background additionally results in impaired natural killer (NK) cell function. To Charles River in 2003 from NIH.

Coat Color White (albino)

Research Application Tumor biology and xenograft research

NCI grantees: See our NCI Grantee Models section for an equivalent/alternative model with special NCI grantee pricing.

BALB/c Nude Mice*

when ordering, specify BALB/c Nude

Strain Code: 194 (Homozygous), 195 (Heterozygous)†

Learn More

Male/Female	Price
Homozygous, either sex nu/nu, 4-5 weeks (28-41 days)‡	240.44
Heterozygous, either sex nu+, 4-5 weeks (28-41 days)‡	88.44
6 weeks-plus‡	Price upon request

** Inbred, isolator-maintained*
† Heterozygous (haired) animals are not immunodeficient.
‡ Estimated age

Nomenclature CAnN.Cg-*Foxn1*^{nu}/Crl

Origin Developed through crosses and backcrosses between BALB/cABom-nu and BALB/cAnNCrj-nu at Charles River Japan. Pedigreed pregnant females of CAnN.Cg-*Foxn1*^{nu}/Crl were received from Charles River Japan in 1985. This mouse is inbred, and genetic monitoring results confirm it to be a BALB/c nude. The homozygous animal lacks a thymus, is unable to produce T cells, and is therefore immunodeficient.

Coat Color Hairless, albino background

Research Application Tumor biology and xenograft research

CD-1® Nude Mice*

when ordering, specify CD-1® Nude

Strain Code: 086 (Homozygous), 087 (Heterozygous)†

Learn More

	Male Quantity and Pricing
Age in Weeks‡	**1-100**
3-5 (21-41 days)	100.56
6-7 (42-55 days)	111.52
8 (56-62 days)	125.50
9-plus	Price upon request

	Female Quantity and Pricing
Age in Weeks‡	**1-100**
3-5 (21-41 days)	116.87
6-7 (42-55 days)	129.66
8 (56-62 days)	146.80
9-plus	Price upon request

** Outbred, isolator-maintained*
† Heterozygous (haired) animals are not immunodeficient. Call 1.800.522.7287 for pricing and availability.
‡ Estimated age.

Nomenclature Crl:CD1-*Foxn1*^{nu}

Origin Developed from the transfer of the nude gene from Crl:NU-*Foxn1*^{nu} to a CD-1® mouse through a series of crosses and backcrosses beginning in 1979 at Charles River Wilmington, MA. The homozygous animal lacks a thymus, is unable to produce T cells, and is therefore immunodeficient.

Coat Color Hairless, albino background

Research Application Tumor biology and xenograft research

NIH-III Nude Mice*

Strain Code: 201 (Homozygous), 202 (Heterozygous)†

Learn More

Male/Female	Price
Homozygous, either sex nu/nu, 4-5 weeks (28-41 days)‡	138.59
Heterozygous, either sex nu/+, 4-5 weeks (28-41 days)‡	71.41
6 weeks-plus‡	Price upon request

** Outbred, isolator-maintained*
† Heterozygous (haired) animals are not immunodeficient.
‡ Estimated age

Nomenclature Crl:NIH-*Lyst*$^{bg\text{-}J}$ *Foxn1*^{nu} *Btk*^{xid}

Origin Most commonly called the NIH-III, it was developed at NIH. In addition to the nude gene, which results in the absence of thymus and T cell function, this mouse has two other mutations important in regulating the function of the immune system. These are designated as x-linked immune defect *Btk*^{xid} and beige *Lyst*$^{bg\text{-}J}$. The xid mutation affects the maturation of T-independent B lymphocytes. It has been demonstrated that bg homozygotes have defective natural killer (NK) cells that are cytotoxic *in vitro* to tumor cells. However, the extent of the T-independent B lymphocyte and NK cell deficiencies in the NIH-III have not been established.

Coat Color Hairless, light to dark gray pigmented skin

Research Application Tumor biology and xenograft research

NU/NU Nude Mice*

Strain Code: 088 (Homozygous), 089 (Heterozygous)†

Learn More

	Male Quantity and Pricing
Age in Weeks‡	**1-100**
3-5 (21-41 days)	100.56
6-7 (42-55 days)	111.52
8 (56-62 days)	125.50
9-plus	Price upon request

	Female Quantity and Pricing
Age in Weeks‡	**1-100**
3-5 (21-41 days)	116.87
6-7 (42-55 days)	129.66
8 (56-62 days)	145.30
9-plus	Price upon request

** Outbred, isolator-maintained*
† Heterozygous (haired) animals are not immunodeficient. Call 1.800.522.7287 for pricing and availability.
‡ Estimated age

Nomenclature Crl:NU-*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, and is not associated with any stock or strain. The homozygous animal lacks a thymus, is unable to produce T cells, and is therefore immunodeficient.

Coat Color Hairless, albino background

Research Application Tumor biology and xenograft research

SCID Hairless Outbred Mice*

when ordering, specify SHO®

Strain Code: 474

Learn More

	Male Quantity and Pricing
Age in Weeks†	**1-100**
3-5 (21-41 days)	129.09
6-7 (42-55 days)	143.11
8 (56-62 days)	162.65
9-plus	Price upon request

	Female Quantity and Pricing
Age in Weeks†	**1-100**
3-5 (21-41 days)	150.18
6-7 (42-55 days)	166.45
8 (56-62 days)	185.05
9-plus	Price upon request

** Outbred, isolator-maintained*
† Estimated age

Nomenclature Crl:SHO-*Prkdc*^{scid} *Hr*^{hr}

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*^{hr} stocks. The resulting animals are homozygous for the *Prkdc*^{scid} and the *Hr*^{hr} mutations and thus exhibit the severe combined immunodeficiency phenotype characteristic of SCID mice and are also hairless.

Coat Color Hairless, albino background

Research Application Tumor biology and xenograft research

NCI SCID/NCr Mice*

Strain Code: 561

Learn More

	Male	Female
Age in Weeks†	**Price**	**Price**
3 (21-27 days)	154.91	154.91
4 (28-34 days)	158.43	158.43
5 (35-41 days)	161.73	161.73
6 (42-48 days)	165.12	165.12
7 (49-55 days)	168.56	168.56
8 (56-62 days)	171.88	171.88
9-plus	Price upon request	Price upon request

** Congenic, isolator-maintained*
† Estimated age

Nomenclature CB17/Icr-*Prkdc*^{scid}/IcrCr

Origin SCID mice possess a genetic autosomal recessive mutation *Prkdc*^{scid}. Discovered in 1980 by Bosma in C.B-17/Icr 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. NCI received this mouse in 1991. To Charles River in 2014.

Coat Color White (albino)

Research Application Tumor biology and xenograft research

Nude Rats*

when ordering, specify RNU

Strain Code: 316 (Homozygous), 118 (Heterozygous)†

Learn More

Age in Weeks‡	Male Price	Female Price
3 (21-27 days)	227.90	232.12
4 (28-34 days)	285.24	285.24
5 (35-41 days)	342.65	342.65
6 (42-48 days)	395.65	395.65
7 (49-55 days)	453.43	453.43
8 (56-62 days)	505.62	505.62
9 (63-69 days)	559.49	564.58
10 (70-76 days)	572.34	577.69
11-plus	Price upon request	Price upon request

** Outbred, isolator-maintained*
† Heterozygous (haired) animals are not immunodeficient. Call 1.800.522.7287 for pricing and availability.
‡ Estimated age

Nomenclature Crl:NIH-*Foxn1*^{rnu}

Origin The NIH nude rat was developed in 1979-1980 through a series of matings involving eight inbred rat strains. To Charles River from the NIH in 2001. This athymic nude rat is T cell deficient and shows depleted cell populations in thymus-dependent areas of peripheral lymphoid organs.

Coat Color White, black, black and white

Research Application Tumor biology and xenograft research

SRG Rats

Strain Code: 707

Learn More

Age in Weeks*	Male Price	Female Price
3 (21-27 days)	384.04	384.04
4 (28-34 days)	400.58	400.58
5 (35-41 days)	417.11	417.11
6 (42-48 days)	433.65	433.65
7 (49-55 days)	450.19	450.19
8 (56-62 days)	466.73	466.73
9 (63-69 days)	483.26	483.26
10 (70-76 days)	499.80	499.80
11 (77-83 days)	516.34	516.34
12 (84-90 days)	532.88	532.88
13 (91-97 days)	549.41	549.41
14 (98-104 days)	565.95	565.95

**Estimated age*

Nomenclature Sprague Dawley-*Rag2*^{em2hera} *Il2rg*^{em1hera}/HblCrl

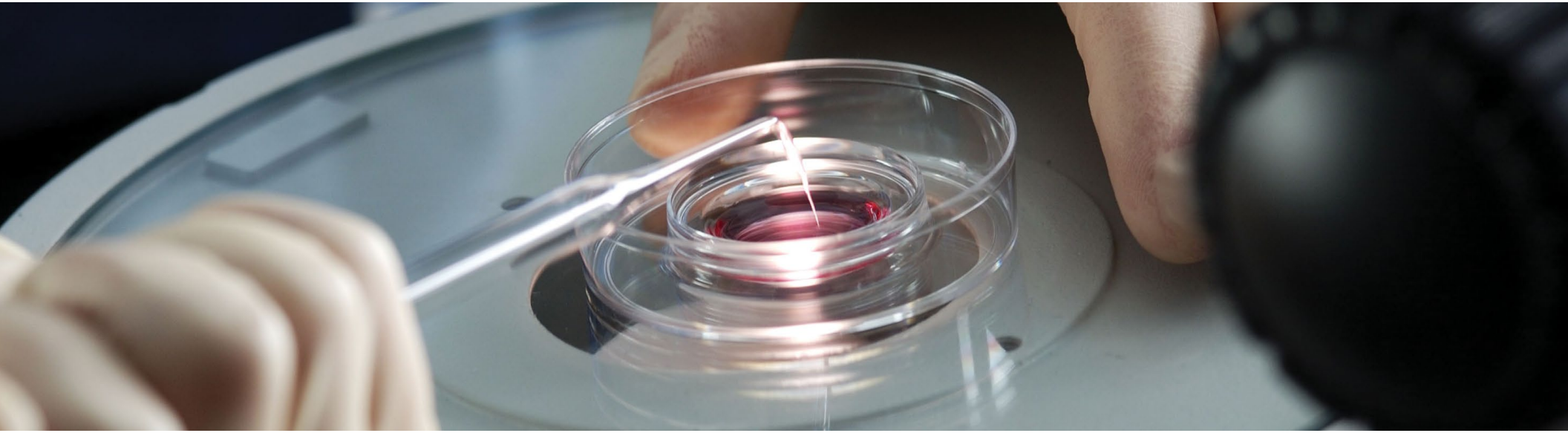
Origin To Charles River from Hera Biolabs in 2021. The SRG (Sprague Dawley, Rag2, Il2rg- "SRG") is a severely immunodeficient inbred rat created through knockout mutations in the *Rag2* and *Il2rgamma* genes, resulting in a deficiency in mature B, T, and NK cells.

Coat Color White

Research Application Tumor biology, oncology, immunology, xenograft transplant research, infectious disease

Commercial use of the SRG may be further subject to Hera Biolabs' Conditions of Use.

The SRG is eligible for our Animal Model Evaluation program.



Cryopreserved

All strains listed below are currently maintained as cryopreserved models. **Please allow a minimum of 12-15 weeks for delivery.** A dedicated supply can be established for large orders, and breeding pairs may be available for select models. Contact our Customer Service Department at ResearchModels@crl.com for pricing and availability.

Common Name	Nomenclature	Coat Color	Therapeutic Area
SCID Hairless Congenic Mice (SHC™)	CB17.Cg-*Prkdc*^{scid}*Hr*^{hr}/IcrCrl	Hairless, albino background	Oncology

Rabbit, Guinea Pig, Gerbil, and Hamster Models

Because most diseases cause a wide range of complications, their study is complex and often requires research programs to take a multidisciplinary approach. Therefore, aside from mouse and rat models, we also provide other species of research models in order to support your program requirements.

Hartley Guinea Pigs

Origin To Charles River in 1968 from Medical Research Council, Mill Hill, England.

Hartley Guinea Pigs

Strain Code: 051

Learn More

Weight in Grams	Specified Sex Price	Either Sex Price
Up to 200	172.22	124.39
201-250	192.22	135.65
251-300	203.60	146.47
301-350	215.44	155.77
351-400	227.01	164.88
401-450	238.97	172.22
451-500	249.92	180.88
501-550	269.53	197.47
551-plus	Price upon request	Price upon request

Nomenclature Crl:HA

Origin To Charles River in 1968 from Medical Research Council, Mill Hill, England.

Coat Color White (acromelanic albino)

LVG Golden Syrian Hamsters

Strain Code: 049

Learn More

Weight in Grams	Male Price	Female Price
Up to 50	58.03	58.03
51-60	64.11	64.11
61-70	69.77	69.77
71-80	78.72	78.72
81-90	88.48	88.48
91-100	99.03	99.03
101-110	106.74	106.74
111-120	111.22	111.22
121-plus	Price upon request	Price upon request
Retired breeders	90.15	90.15
Timed pregnant	–	206.83

Nomenclature Crl:LVG(SYR)

Origin Three members of a litter captured in Syria in 1930 were retained in captivity. It is the progeny of these animals that were first imported to the United States in 1938. Descended from two original colonies acquired by Lakeview in 1949 and 1951. Closed outbred colony since 1951. To Charles River in 1969.

Coat Color Medium tan

Mongolian Gerbils

Strain Code: 243

Learn More

Weight in Grams	Male Price	Female Price
Up to 40	139.98	133.27
41-50	144.08	139.98
51-60	155.07	144.08
61-70	159.74	149.80
71-80	165.21	159.74
81-90	174.34	–
91-plus	Price upon request	Price upon request
Retired breeders	139.98	139.98
Proven breeder pair	–	398.01
Untimed pregnant	–	417.89
Lactating mother with pups	–	438.26

Nomenclature Crl:MON(Tum)

Origin The stock was obtained from Tumblebrook Farms in 1995. Rederived in 1996.

Coat Color Predominantly agouti with some black

New Zealand White Rabbits*

Strain Code: 052

Learn More

Weight Kgs	Specified Sex Price	Either Sex Price
0.8-1.2	74.10‡	–
1.3-1.6	213.60	182.41
1.7-2.0	247.00	213.60
2.1-2.4	280.35	247.00
2.5-2.8	321.79	281.74
2.9-3.2	396.51	360.45
3.3-3.6	452.00	410.12

Pregnant animal pricing and additional services available upon request. Please see our pregnant animal guarantee policy.
** See our research models overview section for rabbit cancellation policy.*
‡ Males only

Nomenclature Crl:KBL(NZW)

Origin The NZW rabbit was obtained in 1991 by Charles River (Canada) from Kitayama Labs K.K. of Nagano Prefecture, Japan.

Coat Color White (albino)

NCI Grantee Models

For more than 25 years, the National Cancer Institute (NCI) partnered with Charles River to produce their research animal models. In 2014, the NCI ceased to maintain an animal vivarium, which ended our production agreement. Charles River subsequently assumed management and operational responsibilities for the existing NCI models and continues to breed and maintain those colonies today.

NCI Outbred Mice

NCI Cr:NIH(S) Mice (NIH Swiss)

Strain Code: 550

	Male	Female
Age in Weeks†	Price	Price
3 (21-27 days)	7.99	7.99
4 (28-34 days)	7.99	7.99
5 (35-41 days)	7.99	7.99
6 (42-48 days)	7.99	7.99
7 (49-55 days)	7.99	7.99
8 (56-62 days)	7.99	7.99
9 (63-69 days)	10.33	10.33
10 (70-76 days)	12.03	10.33
Retired breeders	7.73	7.73
Lactating mouse with litter	–	85.97
Untimed pregnant*	–	38.46

† Estimated age
** For untimed pregnant, please see our pregnant animal guarantee policy*

NCI Cr:SW Mice (Swiss Webster)

Strain Code: 551

	Male	Female
Age in Weeks†	Price	Price
3 (21-27 days)	7.99	7.99
4 (28-34 days)	7.99	7.99
5 (35-41 days)	7.99	7.99
6 (42-48 days)	7.99	7.99
7 (49-55 days)	7.99	7.99
8 (56-62 days)	7.99	7.99
9 (63-69 days)	12.80	12.80
10 (70-76 days)	13.84	13.84
Retired breeders	7.73	7.73
Lactating mouse with litter	–	85.97
Untimed pregnant*	–	38.46

† Estimated age
** For untimed pregnant, please see our pregnant animal guarantee policy*

NCI Inbred Mice

NCI C57BL/6NCr Mice

Strain Code: 556

Age in Weeks†	Male Price	Female Price
3 (21-27 days)	28.70	28.70
4 (28-34 days)	28.70	28.70
5 (35-41 days)	28.70	28.70
6 (42-48 days)	28.70	28.70
7 (49-55 days)	28.70	28.70
8 (56-62 days)	28.70	28.70
9 (63-69 days)	32.43	28.70
10 (70-76 days)	35.66	32.43
Retired breeders	21.06	21.06
Lactating mouse with litter	–	171.73
Untimed pregnant*	–	143.15

** Estimated age*
** For untimed pregnant, please see our pregnant animal guarantee policy*

NCI C57BL/6-cBrd/cBrd/Cr (C57BL/6 albino)

Strain Code: 562

Age in Weeks†	Male Price	Female Price
3 (21-27 days)	35.81	35.81
4 (28-34 days)	35.81	35.81
5 (35-41 days)	35.81	35.81
6 (42-48 days)	35.81	35.81
7 (49-55 days)	35.81	35.81
8 (56-62 days)	39.76	39.76
9 (63-69 days)	43.47	43.47
10 (70-76 days)	47.31	47.31
Retired breeders	26.84	26.84
Lactating mouse with litter	–	209.62
Untimed pregnant*	–	167.58

** Estimated age*
** For untimed pregnant, please see our pregnant animal guarantee policy*

NCI BALB/cAnNCr Mice

Strain Code: 555

Age in Weeks†	Male Price	Female Price
3 (21-27 days)	27.03	27.03
4 (28-34 days)	27.03	27.03
5 (35-41 days)	27.03	27.03
6 (42-48 days)	27.03	27.03
7 (49-55 days)	27.03	27.03
8 (56-62 days)	27.03	27.03
9 (63-69 days)	27.03	27.03
10 (70-76 days)	29.45	29.45
Retired breeders	20.50	20.50
Lactating mouse with litter	–	190.86
Untimed pregnant*	–	143.15

** Estimated age*
** For untimed pregnant, please see our pregnant animal guarantee policy*

NCI FVB/NCr Mice

Strain Code: 559

Age in Weeks†	Male Price	Female Price
3 (21-27 days)	29.70	29.70
4 (28-34 days)	29.70	29.70
5 (35-41 days)	29.70	29.70
6 (42-48 days)	29.70	29.70
7 (49-55 days)	29.70	29.70
8 (56-62 days)	32.36	32.36
9 (63-69 days)	34.96	34.96
10 (70-76 days)	37.43	37.43
Retired breeders	22.55	22.55
Lactating mouse with litter	–	181.10
Untimed pregnant*	–	157.25

** Estimated age*
** For untimed pregnant, please see our pregnant animal guarantee policy*

NCI Hybrid and Congenic Mice

NCI B6D2F1/Cr Mice

Strain Code: 565

	Male	Female
Age in Weeks*	Price	Price
3 (21-27 days)	31.58	31.58
4 (28-34 days)	31.58	31.58
5 (35-41 days)	31.58	31.58
6 (42-48 days)	31.58	31.58
7 (49-55 days)	31.58	31.58
8 (56-62 days)	33.98	33.98
9 (63-69 days)	36.65	36.65
10 (70-76 days)	36.65	36.65
Lactating mouse with litter	–	167.58

** Estimated age*

NCI B6-Ly5.1/Cr Mice*

Strain Code: 564

	Male	Female
Age in Weeks†	Price	Price
3 (21-27 days)	31.58	31.58
4 (28-34 days)	31.58	31.58
5 (35-41 days)	31.58	31.58
6 (42-48 days)	31.58	31.58
7 (49-55 days)	31.58	31.58
8 (56-62 days)	37.43	37.43
9 (63-69 days)	43.34	43.34
10 (70-76 days)	47.63	47.63
Retired breeders	29.70	29.70

** Congenic*
† Estimated age

NCI Immunodeficient Models

Characteristic	NCI Athymic NCr-nu/nu	NCI NOD.SCID/NCr	NCI SCID/NCr
Hair Coat	No	Yes	Yes
T Cell Deficient	Yes	Yes	Yes
B Cell Deficient	No	Yes	Yes
NK Cell Deficient	No	Impaired	No
Species	Mouse	Mouse	Mouse
Genetics	Outbred	Congenic	Congenic

** Estimated age*

NCI Athymic NCr-nu/nu Mice

Strain Code: 553

	Male	Female
Age in Weeks*	Price	Price
3 (21-27 days)	74.20	74.20
4 (28-34 days)	74.20	74.20
5 (35-41 days)	74.20	74.20
6 (42-48 days)	74.20	74.20
7 (49-55 days)	74.20	74.20
8 (56-62 days)	75.96	75.96
9 (63-69 days)	79.28	79.28
10 (70-76 days)	82.40	82.40
Retired breeders	72.97	N/A

** Estimated age*

NCI Athymic NCr-nu/+ Mice*

Strain Code: 554

	Male	Female
Age in Weeks†	Price	Price
3 (21-27 days)	44.45	44.45
4 (28-34 days)	44.45	44.45
5 (35-41 days)	44.45	44.45
6 (42-48 days)	44.45	44.45
7 (49-55 days)	44.45	44.45
8 (56-62 days)	47.56	47.56
9 (63-69 days)	50.75	50.75
10 (70-76 days)	53.93	53.93
Retired breeders	N/A	29.96
Lactating mouse with litter	–	293.52
Untimed pregnant	–	274.02

** Heterozygous (haired) animals are not immunodeficient*
† Estimated age

NCI Immunodeficient Models

NCI NOD.SCID/NCr Mice

Strain Code: 560

	Male	Female
Age in Weeks*	Price	Price
3 (21-27 days)	127.29	127.29
4 (28-34 days)	127.29	127.29
5 (35-41 days)	127.29	127.29
6 (42-48 days)	127.29	127.29
7 (49-55 days)	127.29	127.29
8 (56-62 days)	130.35	130.35
9 (63-69 days)	133.60	133.60
10 (70-76 days)	136.79	136.79
Retired breeders	107.67	107.67
Lactating mouse with litter	–	254.40
Untimed pregnant	–	234.91

** Estimated age*

NCI SCID/NCr Mice

Strain Code: 561

	Male	Female
Age in Weeks*	Price	Price
3 (21-27 days)	93.96	93.96
4 (28-34 days)	93.96	93.96
5 (35-41 days)	93.96	93.96
6 (42-48 days)	93.96	93.96
7 (49-55 days)	93.96	93.96
8 (56-62 days)	97.47	97.47
9 (63-69 days)	101.11	101.11
10 (70-76 days)	104.55	104.55
Retired breeders	88.11	88.11
Lactating mouse with litter	–	254.40
Untimed pregnant	–	234.91

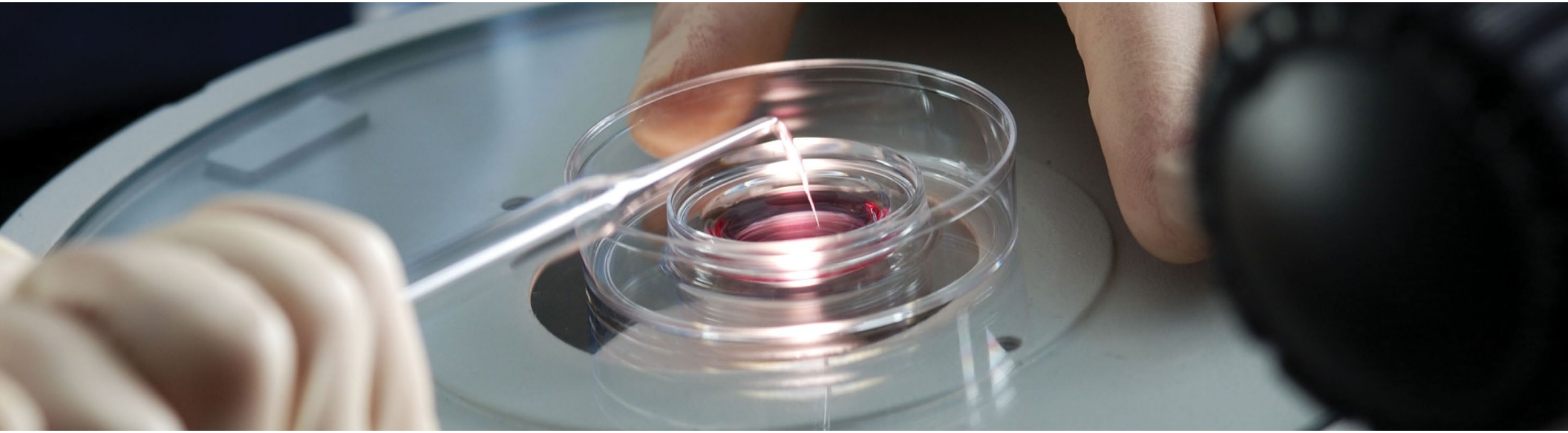
** Estimated age*

Equivalent/Alternative Models*

The Charles River models listed below can be used as an equivalent/alternative option in the event that the NCI models are not available at the specifications you require.

NCI Model	Charles River Equivalent/Alternative
Outbred Mice	
NCI Cr:NIH(S) (NIH Swiss)	CD-1® IGS
NCI Cr:SW (Swiss Webster)	CFW® (Swiss Webster)
Inbred Mice	
NCI BALB/cAnNCr	BALB/c
NCI C3H/HeNCr MTV-	C3H*
NCI C57BL/6-cBrd/cBrd/Cr (C57BL/6 albino)	B6 Albino
NCI C57BL/6NCr	C57BL/6
NCI FVB/NCr	FVB
Hybrid Mice	
NCI B6D2F1/Cr	B6D2F1
NCI CB6F1/Cr	CB6F1*
Immunodeficient Models	
NCI Athymic NCr-nu/nu	Athymic Nude Mice - Homozygous
NCI Athymic NCr-nu/+	Athymic Nude Mice - Heterozygous
NCI NOD.SCID/NCr	NOD SCID Mice
NCI SCID/NCr	Fox Chase SCID® Mice (C.B-17 SCID)

** Prices may vary slighlty*



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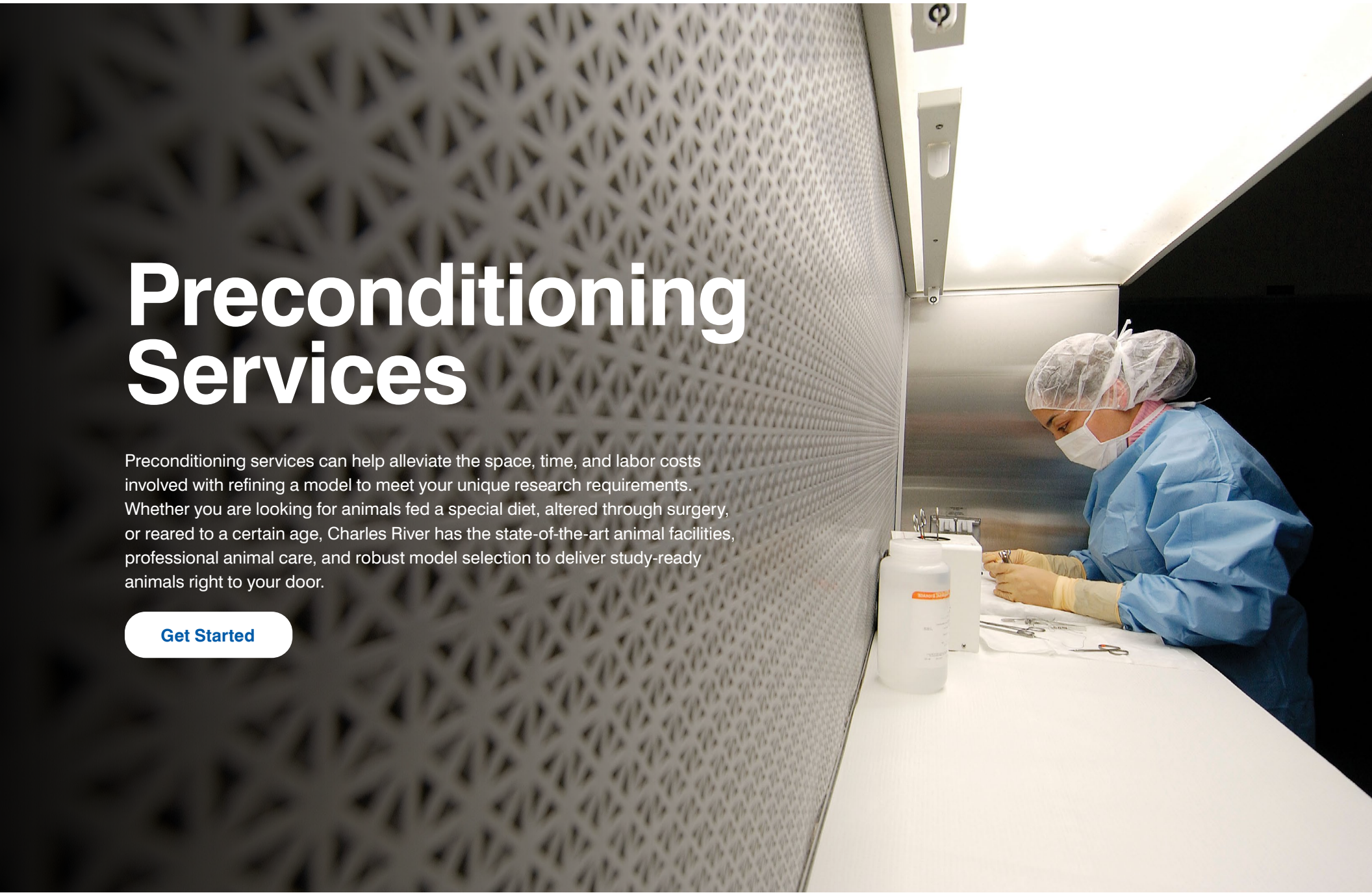
Common Name	Nomenclature	Coat Color
NCI A/JCr	A/JCr	White (albino)

Preconditioning Services

Preconditioning services can help alleviate the space, time, and labor costs involved with refining a model to meet your unique research requirements. Whether you are looking for animals fed a special diet, altered through surgery, or reared to a certain age, Charles River has the state-of-the-art animal facilities, professional animal care, and robust model selection to deliver study-ready animals right to your door.

Get Started



Rodent Surgery

Many of our surgical procedures can be combined into one order. For more information regarding combination procedures or to place an order, please contact Customer Service at 1.800.522.7287. You can also request a quote for any of our surgical procedures.

Rodent Surgery Cancellation

Cancellations must be received at least **six business days (eleven business days for guinea pigs & other intercompany animal transfers)** prior to the scheduled ship date for most orders. Notice of cancellation is extended prior to the scheduled ship date for procedures with prolonged holding times, including, but not limited to: 5/6 nephrectomy, Parkinson's, and telemetry procedures. Order cancellations requested outside of our policy will incur fees for animals and a cancellation fee for surgery procedure(s).

Preconditioned Models

Charles River can provide preconditioned models that meet your exact study needs, saving you space, time, and labor costs. Our husbandry procedures utilize strict biosecurity guidelines developed under the direction of the professional staff at our AAALAC-accredited facilities. We offer services that include pre-identification, pre-screening, pre-dosing/pre-injection, feeding, aging, and phenotypic evaluations. Any of these services can be used, alone or in combination, based on your needs. For further information, please contact Customer Service at ResearchModels@crl.com, or request a quote online.

Biospecimens

Biospecimens are used to gain a better understanding of a compound's pharmacokinetic properties. We can provide blood products, tissues, and organs collected from VAF/Plus® rats, mice, guinea pigs, hamsters, or gerbils.

Benefits

- Whole blood is collected fresh on shipment day.
- Samples are collected from VAF/Plus® or SPF animals.
- Biospecimen collection can be customized upon request.
- Samples for multiple species are available.
- All collections may be performed aseptically upon request.
- Organs can be perfused with saline upon request.

Vascular Catheterizations[1]

Learn More

	Code	Rat Price*†	Mouse Price*†	Guinea Pig Price*†
Carotid artery – common	CARART	154.80	237.60	208.90
Carotid artery – cranial dosing[2]	CARART-CD	172.30	260.40	-
Femoral artery	FEMART	179.00	-	-
Femoral vein	FEMVEIN	149.85	-	-
Jugular vein	JUGVEIN	122.65	174.75	151.10
Double jugular vein[3]	JUGJUGVEIN	246.55	-	301.30
Portal vein	PORTVEIN	262.35	-	-
Vena cava (femoral vein)	VENACAVA-FV	152.65	-	-

Any two vascular catheter procedures may be combined.

1. Charles River partners with multiple catheter manufacturers to provide standard and customized catheters. Our standard vascular catheter is made of polyurethane with a blunt-cut tip; however, round-tip catheters are available at an additional cost. Silicone, and blended catheters are available upon request. Specific catheters that are able to accommodate automated samplers are also available at an additional cost.

2. For infusion only; no sample collection.

3. Infusion using only one of these two catheters (indicated on shipping documentation).

** Surgical procedures do not include the price of the animal, shipping, or container charges.*

† Add $16.20 surcharge per animal for gas anesthesia. Add $26.45 surcharge per animal for immunodeficient and isolator-maintained models.

Non-Vascular Catheterizations

Learn More

	Code	Rat Price*†	Mouse Price*†
Bile duct‡	BILECANN	288.10	-
Cecum[1]	CECUM	229.40	261.75
Colon[1]	COLON	289.45	-
Duodenum[1]	DUODCANN	237.90	368.15
Ileum[1]	ILEUM	290.00	-
Intraperitoneal catheterization[1]	IP-CATH	177.45	-
Intrathecal cannulation[1]	THECALCAN	317.00	-
Jejunum[1]	JEJUNUM	318.25	-
Stomach (gastric)[1]	STOMCANN	197.20	-
Subcutaneous catheter[1]	SQCATH	91.05	-

Any non-vascular catheter procedure may be combined with a vascular catheter procedure.

1. For infusion only; no sample collection.

** Surgical procedures do not include the price of the animal, shipping, or container charges.*

† Add $16.20 surcharge per animal for gas anesthesia. Add $26.45 surcharge per animal for immunodeficient and isolator-maintained models.

‡ The IACUC surgery protocol requires an extended postoperative holding period for animal recovery before shipping.

Soft Tissue Procedures

Learn More

	Code	Rat Price*†	Mouse Price*†
Adrenalectomy	ADREX	37.65	39.65
Bile Duct Ligation	BILEDUCLIG	104.40	130.70
Castration	CASTRATE	34.45	36.05
Nephrectomy – Unilateral	NEPHREX	58.50	66.60
5/6 Nephrectomy – Multiple survival‡	5/6 NEPHREX	225.40	247.75
Ovariectomy	OVARIEX	37.55	38.45
Parathyroidectomy‡	PARATHYROX	85.25	-
Splenectomy	SPLEENX	43.70	52.45
Thyroidectomy + Parathyroidectomy	THYRO+PARA	87.90	-
Vasectomy	VASEX	45.85	49.25

A soft-tissue procedure may be combined with a vascular catheter procedure.
Sham procedures are available upon request.
** Surgical procedures do not include the price of the animal, shipping, or container charges.*
† Add $16.20 surcharge per animal for gas anesthesia. Add $26.45 surcharge per animal for immunodeficient and isolator-maintained models.
‡ The IACUC surgery protocol requires an extended postoperative holding period for animal recovery before shipping.

Neurological Procedures

Learn More

	Code	Rat Price*†	Mouse Price*†
Angiotensin II Testing for IVC	ANG II	150.90	-
Bilateral Brain Cannulation[1,2,‡]	BIL-BRAIN	376.55	466.25
Chronic Constriction Injury (CCI) of Sciatic Nerve	BENNETT	284.40	-
Intracisternal Cannulation	INTRCIST	291.20	-
Intralateral Ventricular Cannulation[1,‡]	IVC	209.80	242.35
Intralateral Ventricular Cannulation MRI Compatible[1,‡]	IVC-MRI	253.20	-
Intralateral Ventricular Cannulation for Pump Connection[1,‡]	IVCTUBING	244.65	292.80
Intralateral Ventricular Cannulation for Pump Connection MRI Compatible[1,‡]	IVCTUBINGMRI	292.70	-
Intrathecal Cannulation[1,‡]	THECALCANN	317.00	-
Microdialysis Probe Implantation[2,‡]	UNI-BMICRO	278.20	-
Parkinson's Model (Chemical 6-OHDA)[‡]	PARKINSON	343.95	-
Spinal Nerve Ligation (SNL)	CHUNG	307.35	-
Third Ventricular Cannulation[1,‡]	3RDVENTCAN	239.40	339.50
Unilateral Brain Cannulation[1,2,‡]	UNI-BRAIN	227.90	258.30
Unilateral Brain Cannulation MRI Compatible[1,2,‡]	UNIBRAIN-MRI	271.10	301.80

Any of these procedures may be combined with a vascular catheter procedure.

1. For infusion only; no sample collection.

2. Customer provides coordinates.

** Surgical procedures do not include the price of the animal, shipping, or container charges.*

† Add $16.20 surcharge per animal for gas anesthesia. Add $26.45 surcharge per animal for immunodeficient and isolator-maintained models.

‡ The IACUC surgery protocol requires an extended postoperative holding period for animal recovery before shipping.

Cardiovascular Procedures

Learn More

	Code	Rat Price*†
Thoracic aortic banding – ascending aorta‡	AATABAND	301.55
Thoracic aortic banding – transverse aorta‡	TABAND	233.40

** Surgical procedures do not include the price of the animal, shipping, or container charges.*

† Add $16.20 surcharge per animal for gas anesthesia. Add $26.45 surcharge per animal for immunodeficient and isolator-maintained models.

‡ The IACUC surgery protocol requires an extended postoperative holding period for animal recovery before shipping.

Device Implants[1,2]

Learn More

	Code	Rat Price*†	Mouse Price*†
Blood pressure telemetry‡	TELEMBP	303.95	341.30
Blood pressure + electrocardiograph telemetry‡	TELEMBPECG	371.95	444.25
Blood pressure + electroencephalograph telemetry‡	TELEMBPEEG	359.15	-
Electrocardiograph telemetry‡	TELEMECG	246.80	255.90
Electroencephalograph‡	EEG	240.20	315.45
Electroencephalograph + electrocardiograph telemetry‡	EEG/ECG	283.65	305.25
Electroencephalograph + electromyograph telemetry‡	EEG/EMG	295.85	360.30
Electroencephalograph + electroencephalograph + electromyograph‡	EEG/EEG/EMG	506.00	
Electromyograph telemetry‡	EMG	240.20	-
Left ventricle pressure telemetry‡	TELEMLVP	678.10	-
Pleural pressure telemetry‡	TELEMPP	415.65	-
Pleural pressure + electrocardiograph telemetry‡	TELEMPPECG	504.85	-
Portal vein pressure telemetry	TELEMPVP	345.30	-
Simple injectable implant	IMPLANT	40.10	40.10
Temperature + activity telemetry‡	TELEMTA	210.75	236.00

1. Charles River does not stock of any of these items, but will implant them when supplied by the customer in factory-direct packaging. Price does not include the cost of these devices. The items must be drop shipped directly from the vendor to Charles River. Shipping address will be provided after order confirmation. Contact Charles River for other combinations of telemetry procedures.

2. Charles River can implant DSI™, emka Technologies, and Stellar implantable telemetry devices.

** Surgical procedures do not include the price of the animal, shipping, or container charges.*

† Add $16.20 surcharge per animal for gas anesthesia. Add $26.45 surcharge per animal for immunodeficient and isolator-maintained models.

‡ The IACUC surgery protocol requires an extended postoperative holding period for animal recovery before shipping.

Accessories for Catheterized Rodents

	Code	Rat Price*†	Mouse Price*†	Guinea Pig Price*†
Instech brand button application only[1]	INSTBUTTON	48.75	48.75	-
Instech brand one-channel magnetic button (VABR1B/22 for rats or guinea pigs and VABM1B/25 for mice)[2]	INSTBUTON1CH	79.05	73.45	79.05
Instech brand one-channel MRI compatible button (VAB95BS-MRI for rats or guinea pigs and VAB62BS/25-MRI for mice)[2]	INST-VAB-MRI	125.20	104.80	125.20
Instech brand two-channel magnetic button (VABR2B/22 for rats or guinea pigs and VABM2B/25R25 for mice)[2]	INSTBUTON2CH	90.35	84.70	90.35
Instech brand three-channel magnetic button (VABR3B/22 for rats)[2]	INSTBUTON3CH	101.65	-	-
Instech brand four-channel magnetic button (VABR4B/22 for rats)[2]	INSTBUTON4CH	123.10		
Instech brand button cap (VABRC for rats or guinea pigs and VABM1C for mice)	INSTBUTONCAP	25.75	25.75	25.75
Instech brand harness (application only)[1]	INSTJACKET	14.75	-	14.75
Instech brand harness (single-channel VAH95AB)[2]	INSTJACKET+S	84.40	-	-
Instech brand harness (two-channel VAHD115AB)[2]	INSTJACKET+D	116.40	-	-
Instech brand harness for bile (VAHD115AB +VAHD115L)[2]	INSTJACKET+B	175.00	-	-
Instech brand harness (three-channel VAHD115AB-1P)[2]	INSTJCKT-3CH	139.10		
Instech brand one-channel magnetic button smaller pin (VABR1B/27 for rats)[2]	INSTBUTON27G	109.60	-	-
SAI brand one-channel magnetic button (CAB22-R1 for rats or guinea pigs and CABM25-R1 for mice)[2]	SAIBUTON1CH	79.05	73.45	79.05
SAI brand two-channel magnetic button (CAB22-R2 for rats or guinea pigs and CABM25-R2 for mice)[2]	SAIBUTON2CH	90.35	84.70	90.35
SAI brand three-channel magnetic button (CAB22-R3 for rats)[2]	SAIBUTON3CH	101.65		
SAI brand button cap (CAB-RCR for rats or guinea pigs and CAB-BCM for mice)	SAIBUTONCAP	25.75	25.75	25.75
SAI brand harness (application only)[1]	SAIJACKET	14.75	-	14.75
SAI brand harness (single-channel QCH-22)	SAIJACKET+S	66.50	-	-
SAI brand harness (two-channel QCDH-22)[2]	SAIJACKET+D	91.85	-	-
SAI brand port	SAICANNUPORT	7.65	7.65	7.65
Instech brand PinPort™[2]	INSTPINPORT	7.65	7.65	7.65
Instech brand PinPort™ - MRI compatible[2]	PINPORT-MRI	26.35	26.35	26.35
Instech brand harness with wire-reinforced belly bands	VAH95ABW	88.40	-	-
Instech brand harness with wire-reinforced 14” belly bands	VAH95ABW14W	101.15	-	-
Instech brand harness with side-mounted injection port	VAH95AB-1P	96.40	-	-
Instech brand blue protective cap for VAHD115AB harness	VAHD115CAP	27.65	-	-

1. Items provided by customer. The items must be drop shipped directly from the vendor to Charles River. Shipping address will be provided after order confirmation. 10% extra accessories are required to mitigate short shipping due to unforeseen complications related to surgery.

2. Provided by Charles River.

** Surgical procedures do not include the price of the animal, shipping, or container charges.*

Surgical Procedures: Miscellaneous Options

	Code	Price
Isoflurane anesthesia	GAS	16.20
Antibiotic – ampicillin	ANTIBIO-AMP	17.50
Antibiotic – enrofloxacin (Baytril)	ANTIBIO-BAY	25.45

Surgical Support

Learn More

	Price†
Rent-a-Surgeon	5,237.25
Rent-a-Trainer	7,569.05

† Pricing is per day per surgeon/trainer. Additional travel expenses will apply.

Pre-ID™ Species

Method*	Mouse	Rat	Guinea Pig	Gerbil	Hamster	Rabbit
Ear punch	•	•	•	•	•	
Ear tag	•	•	•	•	•	
Microchip - subcutaneous implant	•	•	•	•	•	•
RapID TAGS®	•	•	•	•	•	
Somark Labstamp®	•					
Tail marking	•	•				
Tail microchip (SOMARK-CHIP)	•	•				
Tattoo	•	•	•			•

** Not all options are available for every species/strain.*

Pre-ID™ Services*

Learn More

Description	Code	Price
Biomed brand identification chip – subcutaneous implant	BMDS-IMI400	27.05
	BMDS-IMI500	26.75
	BMDS-IMI1000	25.55
	BMDS-IPT300	34.25
	BMDS-IPTT300	35.65
Ear punch	EARPUNCH	5.75
Ear tag	EARTAGS	6.20
RapID TAGS® (customer-supplied tag)†	INSTALLRAPID	8.00
Somark chip - subcutaneous tail implant	SOMARK-CHIP	12.50
Somark Labstamp® (mice only)	LABSTAMP ID	10.40
Tail marking	TAILMARK	5.75
Tattoo	TATTOO	10.65
Trovan® brand identification chip – subcutaneous implant	TROVANCHIP	19.05
UID chip - subcutaneous implant	UID-UC1485	23.75
	UID-UC2112	23.45
UID temperature chip - subcutaneous implant	UID-UCT2112	28.85

** Pre-ID™ services do not include the price of the animal, shipping, or container charges.*
† Charles River can supply the tag and service for $16.70 per animal.

Pre-Screening Services*

Description	Code	Price
Glucose monitoring	GLUCOSE	10.45

** Pre-screening services do not include the price of the animal, shipping, or container charges.*

Pre-Dosing/Pre-Injection Services*

Description	Code	Price
Injection†	INJECT	8.70
IP (intraperitoneal) injection†	INJ-IP	8.70
IP (intraperitoneal) injection of pristane (mice only)	PRISTANE	7.55
Subcutaneous injection†	INJ-SUB-Q	8.70

** Pre-dosing/pre-injection services do not include the price of the animal, shipping, or container charges.*
† Customer-supplied injectable

Rabbit Services

Description	Price
Diet acclimation (irradiated feed only)	25.65 per rabbit, per week
Pair-housing, cage mates, and litter mates	12.85 per rabbit
Ocular exams (board-certified opthalmologist)	115.4 per rabbit*

** Minimum order of 20.*

Custom Diets*

Learn More

Animals available from Charles River barrier rooms can be pre-fed specialized diets to induce obesity, hypertension, or stroke. Additionally, customers have the option to receive biospecimens (e.g., tissue, organs, serum) from animals that have been preconditioned and/or had a surgical procedure.

** Pricing is based on the strain of animal, length, and complexity of the program.*

Aging Services*

Learn More

In some models, the disease conditions develop as the animal ages. Any of our barrier-reared animals can be aged upon request. Some strains will exhibit the following as they age:

- Hypertension
- Heart failure

** Pricing is based on the strain of animal, length, and complexity of the program.*

Phenotypic Evaluations*

As animals are held, various phenotypic parameters can be measured, recorded, and analyzed. Available parameters include:

- Body weight
- Monitoring of food and water intake
- Blood glucose and insulin levels
- Clinical chemistry
- Blood pressure monitoring

** Pricing is based on the strain of animal, length, and complexity of the program.*

Biospecimens

Learn More

Blood Products

- Whole blood
- Serum/plasma
- Anticoagulants commonly used: K2 EDTA, K3 EDTA, sodium heparin, lithium heparin, sodium citrate

Tissues and Organs*

- Adipose tissue
  - White
  - Brown
- Bladder
- Bone
- Brain
- Connective tissue
- Ears
- Eyes
- Gallbladder
- Gastrointestinal tract
  - Buccal cavity
  - Cecum
  - Esophagus
  - Large intestine
  - Rectum
  - Small intestine
  - Stomach
- Glandular tissue
  - Salivary
  - Thymus
  - Thyroid
- Heart
- Kidneys
- Liver
- Lungs
- Lymph nodes
- Muscle tissue
- Nervous tissue
- Pancreas
- Reproductive tract — male
  - Epididymus
  - Penis
  - Preputial gland
  - Prostate
  - Testes
  - Vesicular gland
  - Vas deferens
- Reproductive tract — female
  - Cervix
  - Fallopian tubes
  - Ovaries
  - Uterus
  - Vaginal fornix
- Skin
- Spleen
- Tail
- Trachea
- Vascular Tissue
  - Aorta
  - Major arteries and veins

** Tissues can be shipped fresh in PBS, PBS with 25% sucrose, or customized if requested. Tissues may be flash frozen by immersion in liquid nitrogen, or fresh frozen, then stored in -80 °C until shipped on dry ice.*

Commonly Ordered Tissues and Organs†

The chart below shows pricing for the most commonly ordered rat and mouse model tissues and organs. These prices do not apply to disease, specialty, or immunodeficient models. If you want a price for a model that is not included, or for any tissue or organ not shown below, please contact Customer Service at 1-800-522-7287.

Tissue/Organ	Rat Price*	Mouse Price*
Adrenal Glands	30.20	21.25
Bone (femur)	49.10	39.10
Brain	40.50	21.90
Heart	34.75	28.05
Intestines	49.10	30.50
Kidneys	30.20	20.15
Liver	30.20	20.15
Lungs	34.75	28.05
Ovaries	26.80	17.30
Pancreas	28.00	15.35
Prostate	40.50	21.90
Skeletal Muscle (quads)	49.10	39.10

Tissue/Organ	Rat Price*	Mouse Price*
Skin	40.50	26.20
Spinal Cord	43.95	23.60
Spleen	28.00	15.35
Tail	24.70	14.70
Testicles	28.00	17.30
Thymus	33.65	23.60
Thyroid/Parathyroid	33.65	23.60
Tongue	24.70	14.70
Uterus	26.80	17.30
Perfusion	1.60	1.60
Media - DMEM	8.45	8.45
Media - PBS	8.45	8.45
Media - RPMI	8.45	8.45

** Pricing shown is per tissue/organ and does not include shipping costs.*
† For non-specified rat or non-specified mouse

Commonly Ordered Blood Products

Plasma, serum, and whole blood are readily available from VAF/Plus® mice and rats. To request commonly ordered blood products, please visit our website or contact Customer Service at 1.800.522.7287.

Species	Sizing
Mice	1 mL, 5 mL
Rats	1 mL, 5 mL

Commonly Ordered Blood Products	Price
Mouse plasma and serum	7.85/mL
Mouse whole blood	4.85/mL
Rat plasma and serum	3.35/mL
Rat whole blood	2.45/mL

Research Animal Diagnostic Services

Charles River Research Animal Diagnostic Services is the only comprehensive partner that offers solutions from prevention to resolution. Through innovations like the HemaTIP™ Microsampler, Laboratory Testing Management® (LTM™), MALDI-TOF for microbial identification, PathogenBinder™, and Exhaust Air Dust (EAD®) testing with our PCR Rodent Infectious Agent (PRIA®) panels, we can manage your animal health surveillance program effectively and efficiently.

Dedicated to Saving You Time and Money

When it comes to your research, you can't put a price on value — so we don't. Below are just a few of the value-added complementary services we provide on a daily basis.

- LTM™ is an online free and secure system to store and access testing records and results
  - Complimentary sample collection and shipping supplies
  - Free retesting
- Consultations with Charles River professional scientific staff
  - Outbreak assistance
- Single point of contact: Laboratory Services client support team
  - Rush results for emergency situations
  - Budget-friendly pricing
- Hands-on training and ongoing support for reagents customers
  - Continuing education and training

Health Monitoring Programs

Charles River offers several testing options that can either reduce or completely remove the use of sentinels from your health surveillance programs. Below we outline alternative, hybrid, and traditional health monitoring programs.

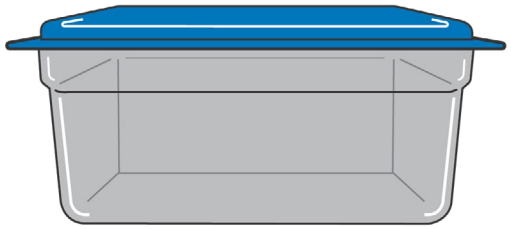
Alternative (Sentinel-Free) Programs

Charles River offers the new PathogenBinder™ collection method and Exhaust Air Dust (EAD®) sample testing as alternative approaches to screening the health of your animal colonies. The increased sensitivity and specificity of our PCR testing in combination with these sampling method enables us to detect viruses, bacteria, and parasites in any housing scenario utilizing soiled bedding sampling, screening ventilated caging systems or swabbing other environmental surfaces. This approach not only reduces or eliminates the need for sentinels, but it also increases the probability of detecting those infectious agents that are not readily detected by sentinels exposed to soiled bedding. Any of our standard PRIA® panels can be used or customized to more specifically meet your needs.

Rack Type	Sampling Level	Sample Type Options
Individually ventilated cages (IVC)	Rack-level	PathogenBinder™ EAD® swab* Pre-filter media Rack collection device† Direct‡
Individually ventilated cages (IVC) with cage-level filtration	Cage-level	PathogenBinder™ Cage filter media Direct‡
Static-top filter cages	Rack-level	PathogenBinder™ Direct‡
Conventional open-top cages	Rack-level	PathogenBinder™ Environmental swab§ Direct‡

** E.g., plenum swab, pre-filter swab, and/or exhaust hose swab*
† Caging manufacturer sample collection device
‡ E.g., fecal pellets, body swab, oral swab
§ Swab various surfaces that are in contact with resident animals

NEW PathogenBinder™ Kit



Available exclusively from Charles River, PathogenBinder™ is a novel soiled-bedding sampling method for detecting rodent pathogens without the need for a sentinel animal.

Key benefits of the PathogenBinder™ Kit include:

- Free collection kits
- Usable with any cage type
- Easy to use
- Off-rack placement
- Qualified by Charles River scientists

Learn More

Hybrid Programs

Hybrid programs allow for a combination of alternative environmentally-based samples to be submitted in combination with direct animal (antemortem) samples such as fecal pellets, body swabs, and oral swabs, as well as sentinel serology.

Rack Type	Sampling Level	Sample Type Options
Individually ventilated cages (IVC)	Mixed	Blood/serum Direct† EAD® swab* Rack or cage filter media Cage swab
Static-top filter cages	Mixed	Blood/serum Direct† Cage swab
Conventional open-top cages	Mixed	Blood/serum Direct† Environmental swab‡

** E.g., plenum swab, pre-filter swab, and/or exhaust hose swab*
† E.g., fecal pellets, body swab, oral swab
‡ Swab various surfaces that are in contact with resident animals.

Traditional Whole-Animal Sentinel Program

Whole animals can be submitted for a health monitoring (HM) protocol – samples will be collected in our necropsy laboratory and screened for the presence of infectious agents. Also, services offered as part of an HM protocol are available individually – samples can be collected at your facility and submitted directly to our laboratory for testing. Customized and FELASA-compliant testing is available upon request.

Protocol	Species	Serology*	PCR†	Microbiology‡	Parasitology	Pathology
HM Basic	Mouse, rat, hamster, guinea pig, rabbit, and gerbil	(None)	*Lawsonia* (hamster only)	Upper respiratory and gastrointestinal tracts	Endoparasite and ectoparasite exams	Gross necropsy with histology of lesions
HM Basic (Immunodeficient)	Mouse and rat	(None)	*C.bovis*, *Pneumocystis,* and *Mycoplasma pulmonis* (mouse only)			
HM Prevalent	Mouse and rat	Prevalent	(None)			
HM Standard	Mouse, rat, guinea pig, and rabbit	Tracking	(None)			
HM Assessment	Mouse, rat, hamster, guinea pig, rabbit, and gerbil	Assessment	*Lawsonia* (hamster only)			
HM Plus	Mouse and rat	Assessment Plus	(None)			
HM Plus without Microbiology	Mouse and rat	Assessment Plus	(None)	(None)		
HM Quarterly FELASA	Mouse and rat	FELASA Quarterly	*Helicobacter*	Upper respiratory and gastrointestinal tracts		
HM Annual FELASA	Mouse and rat	FELASA Annual	*Helicobacter*			
Build your own custom protocol	Mouse, rat, hamster, guinea pig, rabbit, and gerbil					

** For a full list of serology agents, please see serology profiles section.*

† In addition to the included PCR tests, samples can be collected and screened for the agent(s) of your choice (e.g., Helicobacter) for an added fee.

‡ For more information on microbiology services, please see microbiology culture section.

Mouse PRIA® Panels — Direct Animal, PathogenBinder™, Exhaust Air Dust (EAD®), and Environmental Sampling

Custom panels available upon request. Agent lists for other panels, such as Prevalent, Tracking, and Surveillance Plus, can be found in LTM™.

Learn More

	Immunocompetent (IC)		Immunodeficient (ID)				
Agent	**Quarterly IC PRIA**	**Annual IC PRIA**	**Quarterly ID PRIA**	**Annual ID PRIA**	**Comprehensive PRIA**	**FELASA Basic (3-month) PRIA**	**FELASA Complete (Annual) PRIA**
Viruses							
Mouse parvoviruses (MVM/MPV 1-5)	•	•	•	•	•	•	•
Murine norovirus (MNV)	•	•	•	•	•	•	•
Mouse coronavirus (MHV)	•	•	•	•	•	•	•
Murine rotavirus (MRV/EDIM)	•	•	•	•	•	•	•
Mouse theilovirus (TMEV, GDVII)	•	•	•	•	•	•	•
Adenovirus type 1 & 2 (MAV-1 & MAV-2)	•	•	•	•	•		•
Reovirus type 1, 2, 3, 4		•		•	•		•
Murine orthopneumovirus (Pneumonia virus of mice/PVM)					•		•
Sendai virus					•		•
Ectromelia (mousepox)					•		•
Lymphocytic choriomeningitis virus (LCMV)		•		•	•		•
New World hantaviruses					•		
Old World hantaviruses (will not detect Hantaan)					•		
Hantaan hantavirus					•		
Lactate dehydrogenase-elevating virus (LDV)		•		•	•		
Astrovirus 1					•		
Astrovirus 2					•		
Murine chapparvovirus (MuCPV, MKPV, RoChPV-1)	•	•	•	•	•		
Mouse thymic virus (MTLV)		•		•	•		
Mouse cytomegalovirus (MCMV)					•		
Mouse polyomavirus					•		

Continued on next page.

Mouse PRIA® Panels — Direct Animal, PathogenBinder™, Exhaust Air Dust (EAD®), and Environmental Sampling

Custom panels available upon request. Agent lists for other panels, such as Prevalent, Tracking, and Surveillance Plus, can be found in LTM™.

	Immunocompetent (IC)		Immunodeficient (ID)				
Agent	**Quarterly IC PRIA**	**Annual IC PRIA**	**Quarterly ID PRIA**	**Annual ID PRIA**	**Comprehensive PRIA**	**FELASA Basic (3-month) PRIA**	**FELASA Complete (Annual) PRIA**
Bacteria							
Helicobacter	•	•	•	•	•	•	•
Citrobacter rodentium							•
Mycoplasma pulmonis					•		•
Streptobacillus moniliformis							•
Rodentibacter pneumotropicus	•	•	•	•	•	•	•
Rodentibacter heylii	•	•	•	•	•	•	•
Clostridium piliforme							•
Pseudomonas aeruginosa		•	•	•	•		
Salmonella					•		•
Campylobacter					•		
Bordetella bronchiseptica		•		•	•		
Bordetella hinzii/B. pseudohinzii		•	•	•	•		
Corynebacterium kutscheri							•
Corynebacterium bovis		•	•	•	•		
Staphylococcus aureus		•	•	•	•		
Streptococcus pneumoniae		•	•	•	•	•	•
Klebsiella pneumoniae		•	•	•	•		
Klebsiella oxytoca		•	•	•	•		
Beta-hemolytic *Streptococcus* group A (*S. pyogenes*)			•	•	•	•	•
Beta-hemolytic *Streptococcus* group B: (*S. agalactiae, S. dysgalactiae subsp. equisimilis**)			•	•	•	•	•
Beta-hemolytic *Streptococcus* group C (*S. equi subsp. equi and zooepidemicus*)		•	•	•	•	•	•
Beta-hemolytic *Streptococcus* group G (*S. dysgalactiae subsp. dysgalactiae and subsp. equisimilis*)		•	•	•	•	•	•
Chlamydia muridarum		•		•	•		
Pasteurella multocida					•		
Proteus mirabilis			•	•	•		
Staphylococcus xylosus					•		

Continued on next page.

Mouse PRIA® Panels — Direct Animal, PathogenBinder™, Exhaust Air Dust (EAD®), and Environmental Sampling

Custom panels available upon request. Agent lists for other panels, such as Prevalent, Tracking, and Surveillance Plus, can be found in LTM™.

	Immunocompetent (IC)		Immunodeficient (ID)				
Agent	**Quarterly IC PRIA**	**Annual IC PRIA**	**Quarterly ID PRIA**	**Annual ID PRIA**	**Comprehensive PRIA**	**FELASA Basic (3-month) PRIA**	**FELASA Complete (Annual) PRIA**
Parasites/Protozoa/Fungi							
Fur mites *(Myobia, Myocoptes, Radfordia)*	•	•	•	•	•	•	•
Pinworms *(Aspiculuris, Syphacia)*	•	•	•	•	•	•	•
Demodex			•	•	•		
Tropical Rat Mite *(Ornithonyssus bacoti)*					•		
Giardia		•		•	•	•	•
Spironucleus muris		•		•	•	•	•
Cryptosporidium		•		•	•	•	•
Entamoeba		•		•	•	•	•
Eimeria (Coccidia; Cyclospora and Isospora)					•		
Hexamastix		•		•	•		
*Chilomastix (*also detects *Retortamonas)*		•		•	•		
Tritrichomonas		•		•	•		
Pneumocystis		•	•	•	•		

This list represents updated recommendations based on agent current prevalence data. All custom and legacy PRIA panels (e.g. Surveillance plus, Prevalent, etc. and/or institution-specific panels remain in LTM and are available for use.
** In rare cases, S. dysgalactiae subsp. equisimilis may present the Group B Lancefield phenotype*

Additional Assays

Custom panels available upon request, which can include any agents shown above/on previous pages and any agents noted in the additional assays table to the right. In addition, individual agent testing is available for all.

Group	Agent
Viruses	Murine Alphacoronavirus
	Boone Cardiovirus
	Murine Kobuvirus 1
	Murine Kobuvirus 2
	Murine Picornavirus
	Murine Sapovirus
	Rodent Papillomavirus
	Rodent Parechovirus (includes Ljungan vrus)
	Sarbecovirus (COVID/SARS-CoV2)
	Mouse pneumonitis virus (K virus)
Bacteria	*Filobacterium rodentium (CAR bacillus)*
	Leptospira
	Francisella tularensis
Parasites	Rodent Tape Worms *(Hymenolepis [Rodentolepis])*
Fungi	*Encephalitozoon cuniculi*

Rat PRIA® Panels — Direct Animal, PathogenBinder™, Exhaust Air Dust (EAD®), and Environmental Sampling

Custom panels available upon request. Agent lists for other panels, such as Prevalent, Tracking, and Surveillance Plus, can be found in LTM™.

Learn More

	Immunocompetent (IC)		Immunodeficient (ID)				
Agent	**Quarterly IC PRIA**	**Annual IC PRIA**	**Quarterly ID PRIA**	**Annual ID PRIA**	**Comprehensive PRIA**	**FELASA Basic (3-month) PRIA**	**FELASA Complete (Annual) PRIA**
Viruses							
Rat parvoviruses (H-1, KRV, RPV, RMV)	•	•	•	•	•	•	•
Rat polyoma virus 2 (RatPyV2)	•	•	•	•	•	•	•
Rat coronavirus (RCV, SDAV)	•	•	•	•	•	•	•
Rat theilovirus (RTV)	•	•	•	•	•	•	•
Adenovirus type 1 & 2 (MAV-1 & MAV-2)	•	•	•	•	•		•
Reovirus type 1, 2, 3, 4		•		•	•		•
Murine orthopneumovirus (Pneumonia virus of mice/PVM)		•		•	•		•
Sendai virus		•		•	•		•
Ectromelia (mousepox)		•		•	•		•
Lymphocytic choriomeningitis virus (LCMV)		•		•	•		•
Old World hantavirus (Seoul)		•		•	•		
Rat rotavirus (Infectious diarrhea of infant rats/IDIR)					•		
Boone Cardiovirus					•		
Rat Polyomavirus (1)					•		

Continued on next page.

Rat PRIA® Panels — Direct Animal, PathogenBinder™, Exhaust Air Dust (EAD®), and Environmental Sampling

Custom panels available upon request. Agent lists for other panels, such as Prevalent, Tracking, and Surveillance Plus, can be found in LTM™.

	Immunocompetent (IC)		Immunodeficient (ID)				
Agent	**Quarterly IC PRIA**	**Annual IC PRIA**	**Quarterly ID PRIA**	**Annual ID PRIA**	**Comprehensive PRIA**	**FELASA Basic (3-month) PRIA**	**FELASA Complete (Annual) PRIA**
Bacteria							
Helicobacter	•	•	•	•	•	•	•
Citrobacter rodentium							•
Mycoplasma pulmonis		•		•	•		•
Streptobacillus moniliformis		•		•	•		•
Rodentibacter pneumotropicus	•	•	•	•	•	•	•
Rodentibacter heylii	•	•	•	•	•	•	•
Clostridium piliforme					•		•
Filobacterium rodentium					•		
Pseudomonas aeruginosa			•	•	•		
Salmonella					•		•
Campylobacter		•		•	•		
Bordetella bronchiseptica		•		•	•		
Bordetella hinzii/B. pseudohinzii					•		
Corynebacterium kutscheri					•		•
Corynebacterium bovis				•	•		
Staphylococcus aureus			•	•	•		
Streptococcus pneumoniae			•	•	•	•	•
Klebsiella pneumoniae			•	•	•		
Klebsiella oxytoca			•	•	•		
Beta-hemolytic *Streptococcus* group A (*S. pyogenes*)			•	•	•	•	•
Beta-hemolytic *Streptococcus* group B: (*S. agalactiae, S. dysgalactiae subsp. equisimilis**)		•	•	•	•	•	•
Beta-hemolytic *Streptococcus* group C (*S. equi subsp. equi and zooepidemicus*)		•	•	•	•	•	•
Beta-hemolytic *Streptococcus* group G (*S. dysgalactiae subsp. dysgalactiae and subsp. equisimilis)*		•	•	•	•	•	•
Pasteurella multocida					•		
Proteus mirabilis		•	•	•	•		

Continued on next page.

Rat PRIA® Panels — Direct Animal, PathogenBinder™, Exhaust Air Dust (EAD®), and Environmental Sampling

Custom panels available upon request. Agent lists for other panels, such as Prevalent, Tracking, and Surveillance Plus, can be found in LTM™.

	Immunocompetent (IC)		Immunodeficient (ID)				
Agent	**Quarterly IC PRIA**	**Annual IC PRIA**	**Quarterly ID PRIA**	**Annual ID PRIA**	**Comprehensive PRIA**	**FELASA Basic (3-month) PRIA**	**FELASA Complete (Annual) PRIA**
Parasites							
Fur mites *(Myobia, Myocoptes, Radfordia)*	•	•	•	•	•	•	•
Pinworms *(Aspiculuris, Syphacia)*	•	•	•	•	•	•	•
Demodex			•	•	•		
Tropical Rat Mite *(Ornithonyssus bacoti)*		•		•	•		
Protoza							
Giardia		•		•	•	•	•
Spironucleus muris		•		•	•	•	•
Cryptosporidium		•		•	•	•	•
Entamoeba		•		•	•	•	•
Eimeria (Coccidia) (Cyclospora and Isospora)					•		
Hexamastix		•		•	•		
Chilomastix (also detects Retortamonas)		•		•	•		
Tritrichomonas		•		•	•		
Fungi							
Encephalitozoon cuniculi					•		
Pneumocystis		•	•	•	•		

** In rare cases, S. dysgalactiae subsp. equisimilis may present the Group B Lancefield phenotype*

Additional Assays

Custom panels available upon request, which can include any agents shown above/on previous pages and any agents noted in the additional assays table to the right. In addition, individual agent testing is available for all.

Group	Agent
Viruses	Rodent Papillomavirus
	Rodent Parechovirus (includes Ljungan vrus)
	Rat Astrovirus (Murine Astrovirus 2)
	Murine Alphacoronavirus
	Murine Kobuvirus 1
	Murine Kobuvirus 2
	Murine Picornavirus
	Orthopoxvirus
	Sarbecovirus/COVID-plex/SARS-CoV-2
Bacteria	*Staphylococcus xylosus*
	Leptospira
	Francisella tularensis
Parasites	Rodent Tape Worms *(Hymenolepis [Rodentolepis])*

Rabbit PRIA® Panels — Direct Animal Sampling*

Learn More

	FELASA Basic (3-Month)	FELASA Complete (Annual)	Surveillance Plus	FELASA Parasite Add-On	Parasite-Only
Viruses					
Group A rotavirus	•	•	•		
Lymphocytic choriomeningitis virus			•		
Rabbit picobirnavirus			•		
Rabbit hepatitis E virus			•		
Sarbecovirus					
Bacteria					
Helicobacter			•		
Rodentibacter heylii‡			•		
Rodentibacter pneumotropicus‡			•		
Clostridium piliforme	•	•	•		
*Filobacterium rodentium***		•	•		
Pseudomonas aeruginosa			•		
Salmonella		•	•		
Bordetella bronchiseptica	•	•	•		
Staphylococcus aureus			•		
Lawsonia			•		
Pasteurella multocida	•	•	•		
Treponema paraluiscuniculi			•		
Parasites/Protozoa/Fungi					
Eimeria (Coccidia) (Cyclospora and Isospora)			•	•	•
Pinworms (*Passalurus ambiguus*)	•	•	•	•	•
Francisella tularensis†			•	•	•
Cryptosporidium	•	•	•	•	•
Entamoeba			•	•	•
Encephalitozoon cuniculli	•	•	•	•	•
Demodex				•	•
Giardia				•	•
Chilomastix muris				•	
Hexamastix muris				•	

** Fecal pellets, body swab, and oral swab required for all rabbit and gerbil PRIA® panels.*

*** Formerly classified as CAR Bacillus.*

† Available as an add-on assay.

‡ Formerly classified as Pasteurella pneumotropica (Heyl & Jawetz).

Gerbil PRIA® Panels — Direct Animal Sampling*

Learn More

	Surveillance Plus	Parasite-Only
Viruses		
Group A rotavirus (MRV/EDIM)	•	
Sendai virus	•	
Lymphocytic choriomeningitis virus	•	
Sarbecovirus		
Bacteria		
Helicobacter	•	
Rodentibacter heylii†	•	
Rodentibacter pneumotropicus†	•	
Pseudomonas aeruginosa	•	
Salmonella	•	
Bordetella bronchiseptica	•	
Staphylococcus aureus	•	
Streptococcus pneumoniae	•	
Klebsiella pneumoniae	•	
Klebsiella oxytoca	•	
Beta-hemolytic *Streptococcus* group *B*	•	
Beta-hemolytic *Streptococcus* group *C*	•	
Beta-hemolytic *Streptococcus* group *G*	•	
Pasteurella multocida	•	
Parasites/Protozoa/Fungi		
Fur mites	•	
Pinworms	•	
Giardia	•	•
Spironucleus muris	•	
Cryptosporidium	•	•
Entamoeba	•	•
Demodex		•

** Fecal pellets, body swab, and oral swab required for all rabbit and gerbil PRIA® panels.*
† Formerly classified as Pasteurella pneumotropica (Heyl & Jawetz).

Hamster PRIA® Panels — Direct Animal Sampling*

Learn More

	FELASA Basic (3-Month)	FELASA Complete (Annual)	Surveillance Plus	Parasite-Only
Viruses				
Parvovirus (HPV/MVM/MPV1-5)			•	
Group A rotavirus (MRV/EDIM)			•	
Reovirus type 1, 2, 3, 4			•	
Pneumonia virus of mice			•	
Sendai virus	•	•	•	
Lymphocytic choriomeningitis virus	•	•	•	
Polyoma virus			•	
Sarbecovirus				
Bacteria				
Helicobacter		•	•	
Rodentibacter heylii†	•	•	•	
Rodentibacter pneumotropicus†	•	•	•	
Clostridium piliforme		•	•	
Pseudomonas aeruginosa			•	
Salmonella		•	•	
Campylobacter			•	
Bordetella bronchiseptica			•	
Corynebacterium kutscheri		•	•	
Corynebacterium bovis			•	
Staphylococcus aureus			•	
Streptococcus pneumoniae			•	
Klebsiella pneumoniae			•	
Klebsiella oxytoca			•	
Beta-hemolytic *Streptococcus* group A			•	
Beta-hemolytic *Streptococcus* group B			•	
Beta-hemolytic *Streptococcus* group C			•	
Beta-hemolytic *Streptococcus* group G			•	

** Fecal pellets, body swabs, and oral swabs required for all hamster PRIA® panels.*
† Formerly classified as Pasteurella pneumotropica (Heyl & Jawetz).

Continued on next page.

Hamster PRIA® Panels — Direct Animal Sampling* (cont.)

	FELASA Basic (3-Month)	FELASA Complete (Annual)	Surveillance Plus	Parasite-Only
Bacteria (cont.)				
Proteus mirabilis			•	
Pasteurellaceae			•	
Lawsonia			•	
Pasteurella multocida			•	
Parasites/Protozoa/Fungi				
Fur mites	•	•	•	•
Pinworms	•	•	•	•
Giardia	•	•	•	•
Spironucleus muris	•	•	•	•
Cryptosporidium	•	•	•	•
Entamoeba	•	•	•	•
Encephalitozoon cuniculli			•	•
Demodex	•	•	•	•

** Fecal pellets, body swabs, and oral swabs required for all hamster PRIA® panels.*

Guinea Pig PRIA® Panels — Direct Animal Sampling*

Learn More

	FELASA Basic (3-Month)	FELASA Complete (Annual)	Surveillance Plus	Parasite-Only
Viruses				
Group A rotavirus (MRV/EDIM)			•	
Reovirus type 1, 2, 3, 4			•	
Sendai virus	•	•	•	
Lymphocytic choriomeningitis virus			•	
Guinea pig adenovirus	•	•	•	
Guinea pig cytomegalovirus		•	•	
Guinea pig PIV 3	•	•	•	
Sarbecovirus				
Bacteria				
Helicobacter			•	
Mycoplasma pulmonis			•	
Streptobacillus moniliformis		•	•	
Rodentibacter heylii†			•	
Rodentibacter pneumotropicus†			•	
Clostridium piliforme		•	•	
Pseudomonas aeruginosa			•	
Salmonella		•	•	
Campylobacter			•	
Bordetella bronchiseptica	•	•	•	
Corynebacterium kutscheri	•	•	•	
Staphylococcus aureus			•	
Streptococcus pneumoniae	•	•	•	
Klebsiella pneumoniae			•	
Klebsiella oxytoca			•	

** Fecal pellets, body swabs, and oral swabs required for all guinea pig PRIA® panels.*
† Formerly classified as Pasteurella pneumotropica (Heyl & Jawetz).

Guinea Pig PRIA® Panels — Direct Animal Sampling* (cont.)

	FELASA Basic (3-Month)	FELASA Complete (Annual)	Surveillance Plus	Parasite-Only
Bacteria (cont.)				
Beta-hemolytic *Streptococcus* group A	•	•	•	
Beta-hemolytic *Streptococcus* group B	•	•	•	
Beta-hemolytic *Streptococcus* group C	•	•	•	
Beta-hemolytic *Streptococcus* group G	•	•	•	
Pasteurella multocida			•	
Parasites/Protozoa/Fungi				
Eimeria (Coccidia) (Cyclospora and Isospora)				•
Retortamonas				•
Giardia	•	•	•	•
Cryptosporidium	•	•	•	•
Entamoeba	•	•	•	•
Encephalitozoon cuniculli		•	•	•
Demodex				•

** Fecal pellets, body swabs, and oral swabs required for all guinea pig PRIA® panels.*

Serology

Our primary serology testing method is the Multiplexed Fluorometric ImmunoAssay®, or MFIA®. Additionally, we utilize other methods such as the Indirect Fluorescent Antibody (IFA) test, Enzyme-Linked Immunosorbent Assay (ELISA), or Western Blot to confirm questionable or positive results, as well as to screen select rare agents. Blood or diluted serum samples collected at your facility can be submitted directly to our laboratory for testing. Once you are ready to submit samples, visit LTM™ to create your order online.

For gene therapy studies in nonhuman primates (NHPs), adeno-associated viruses are used to shuttle the genes into cells. However, neutralizing antibodies (NAb) in their blood against these AAV carriers can unwittingly interfere with success of the clinical studies. RADS offers AAV NAb services for prescreening of NHPs using their serum prior to enrolling them in studies. Both screening and titer assays are offered for different AAV serotypes using serum only.

The HemaTIP™ blood microsampler simplifies the blood collection process by placing the media on the tip of an easy-to-hold stylus. The tip only needs to touch the blood, and its super-absorptive matrix media wicks the sample in 3-6 seconds.

Mouse Serology Profiles

Agent	Quarterly MFIA	Annual MFIA	Comprehensive MFIA	FELASA Basic (3-month) MFIA	FELASA Complete (Annual) MFIA
Viruses					
Mouse parvoviruses (MVM/MPV 1-5)	•	•	•	•	•
Murine norovirus (MNV)	•	•	•	•	•
Mouse coronavirus (MHV)	•	•	•	•	•
Murine rotavirus (MRV/EDIM)	•	•	•	•	•
Mouse theilovirus (TMEV, GDVII)	•	•	•	•	•
Adenovirus type 1 & 2 (MAV-1 & MAV-2)	•	•	•		•
Reovirus type 1, 2, 3, 4		•	•		•
Murine orthopneumovirus (Pneumonia virus of mice/PVM)			•		•
Sendai virus			•		•
Ectromelia (mousepox)			•		•
Lymphocytic choriomeningitis virus (LCMV)		•	•		•
New World hantaviruses (including Prospect Hill virus)			•		
Hantaan hantavirus			•		
Lactate dehydrogenase-elevating virus (LDV)		•	•		
Astrovirus 2			•		
Mouse thymic virus (MTLV)			•		
Mouse cytomegalovirus (MCMV)			•		
Mouse polyomavirus			•		
COVID-Plex (COVID/SARS-CoV2)*					
Mouse pneumonitis virus (K virus)*					
Bacteria					
Mycoplasma pulmonis			•		•
Clostridium piliforme					•
Fungi					
Encephalitozoon cuniculi			•		

** Can be ordered as additional assays*

Please note: Immunodeficient mouse serology agent panels are to be used for immunocompetent soiled bedding sentinels which monitor immunodeficient mice. Immunodeficient mice cannot be sampled directly for serological testing.

Rat Serology Profiles

Agent	Quarterly MFIA	Annual MFIA	Comprehensive MFIA	FELASA Basic (3-month) MFIA	FELASA Complete (Annual) MFIA
Viruses					
Rat parvoviruses (H-1, KRV, RPV, RMV)	•	•	•	•	•
Rat polyoma virus 2 (RatPyV2)	•	•	•	•	•
Rat coronavirus (RCV, SDAV)	•	•	•	•	•
Rat theilovirus (RTV)	•	•	•	•	•
Adenovirus type 1 & 2 (MAV-1 & MAV-2)	•	•	•		•
Reovirus type 1, 2, 3, 4		•	•		•
Murine orthopneumovirus (Pneumonia virus of mice/PVM)		•	•		•
Sendai virus		•	•		•
Lymphocytic choriomeningitis virus (LCMV)		•	•		•
Old World hantavirus (Hantaan)		•	•		
Rat rotavirus (Infectious diarrhea of infant rats/IDIR)			•		
Sarbecovirus/COVID-plex/SARS-CoV2*					
Bacteria					
Mycoplasma pulmonis		•	•		•
Clostridium piliforme			•		•
Filobacterium rodentium (CAR bacillus)			•		
Fungi					
Encephalitozoon cuniculi			•		
Pneumocystis (P. carinii)	•	•	•		

** Can be ordered as additional assays*

Please note: Immunodeficient rat serology agent panels are to be used for immunocompetent soiled bedding sentinels which monitor immunodeficient rats. Immunodeficient rats cannot be sampled directly for serological testing.

Hamster Serology Profiles**

Agent	Assessment	FELASA Quarterly	FELASA Annual
COVID-Plex*			
Sendai virus (SEND)	•	•	•
Parainfluenza virus (type 5) (PIV-5)	•		
Pneumonia virus of mice (PVM)	•		
Reovirus (REO)	•		
Lymphocytic choriomeningitis virus (LCMV)	•	•	•
Encephalitozoon cuniculi (ECUN)	•		
Clostridium piliforme (CPIL)			•
Sample suitability control: tissue	•	•	•
Sample suitability control: anti-hamster IgG	•	•	•
System suitability control: hamster IgG	•	•	•

** Available as an add-on.*

*** Applicable for golden Syrian hamsters only. Other strains should be screened using the serology profile for miscellaneous rodent species.*

Guinea Pig Serology Profiles

Agent	Assessment	FELASA Quarterly	FELASA Annual
COVID-Plex*			
Sendai virus (SEND)	•	•	•
Parainfluenza virus (type 5) (PIV-5)	•		
Pneumonia virus of mice (PVM)	•		
Reovirus (REO)	•		
Lymphocytic choriomeningitis virus (LCMV)	•		
Encephalitozoon cuniculi (ECUN)	•		•
Parainfluenza virus (type 3) (PIV-3)	•	•	•
Mycoplasma pulmonis (MPUL)	•		
Clostridium piliforme (CPIL)			•
Guinea pig adenovirus (GAV)	•		
Guinea pig cytomegalovirus (GpCMV)			•
Sample suitability control: tissue	•	•	•
Sample suitability control: anti-guinea pig IgG	•	•	•
System suitability control: guinea pig IgG	•	•	•

** Available as an add-on.*

Rabbit Serology Profiles

Agent	Tracking	Assessment	FELASA Quarterly	FELASA Annual
COVID-Plex*				
Encephalitozoon cuniculi (ECUN)	•	•	•	•
Cilia-associated respiratory bacillus (CARB)	•	•		•
Treponema paraluis-cuniculi (TREP)	•	•		
Clostridium piliforme (CPIL)		•	•	•
Parainfluenza virus (type 1) (PIV-1)		•		
Parainfluenza virus (type 5) (PIV-5 [formerly PIV-2])		•		
Reovirus (REO)		•		
Rabbit rotavirus (ROTA)		•	•	•
Lymphocytic choriomeningitis virus (LCMV)		•		
Toxoplasma gondii (TOXO)		•		
Rabbit hemorrhagic disease virus (RHDV)			•	•
Myxomatosis virus (MYXO)*				
Sample suitability control: tissue	•	•	•	•
Sample suitability control: anti-rabbit IgG	•	•	•	•
System suitability control: rabbit IgG	•	•	•	•

** Available as an add-on.*

Gerbil and Miscellaneous Rodent** Serology Profiles

Agent	Gerbil Tracking	Gerbil Assessment	Rodent Assessment
COVID-Plex*			
Lymphocytic choriomeningitis virus (LCMV)	•	•	•
Clostridium piliforme (CPIL)	•	•	
Mouse hepatitis virus (MHV)		•	•
Reovirus (REO)		•	•
Sendai virus (SEND)		•	•
Pneumonia virus of mice (PVM)		•	•
Minute virus of mice (MVM)		•	•
Rabbit rotavirus (ROTA)		•	•
Parainfluenza virus (type 2) (PIV-2)		•	•
Parainfluenza virus (type 3) (PIV-3)		•	•
Hantaan (HTNV [HANT])		•	•
Prospect Hill virus (PHV)		•	•
Encephalitozoon cuniculi (ECUN)			•
Sample suitability control: tissue	•	•	•

** Available as an add-on.*
*** For applicable species (e.g., Armenian hamster, cotton rat, Peromyscus, ground squirrel), contact Charles River.*

Microbiology Culture

Learn More

This service can be used in conjunction with an environmental monitoring (e.g., feed, bedding, water) or animal health surveillance program, and diagnostic evaluation. Live animals, samples (e.g., swabs, transport media), and organisms for identification can be collected at your facility and submitted directly to our laboratory for testing. Matrix-assisted laser desorption/ionization time-of-flight (MALDI-TOF) mass spectrometry analysis is used for efficient and accurate identification of pure single colonies from culture. See the list of agents to the right. Once you are ready to submit samples, visit LTM™ to create your order online.

Upper Respiratory Culture	Mouse	Rat	Rabbit	Gerbil	Hamster	Guinea Pig
Bordetella bronchiseptica	•	•	•	•	•	•
Corynebacterium kutscheri	•	•	•	•	•	•
Klebsiella oxytoca	•	•	•	•	•	•
Klebsiella pneumoniae	•	•	•	•	•	•
Pasteurella multocida	•	•	•	•	•	•
*Rodentibacter heylii**	•	•	•	•	•	•
*Rodentibacter pneumotropicus**	•	•	•	•	•	•
Pseudomonas aeruginosa	•	•	•	•	•	•
Staphylococcus aureus	•	•	•	•	•	•
Streptococcus beta-hemoltyic	•	•	•	•	•	•
Streptococcus pneumoniae	•	•	•	•	•	•
Streptococcus zooepidemicus						•
Proteus mirabilis	•	•	•	•	•	•
Other bacteria	•	•	•	•	•	•

** Formerly classified as Pasteurella pneumotropica (Heyl & Jawetz).*

Gastrointestinal Tract Culture	Mouse	Rat	Rabbit	Gerbil	Hamster	Guinea Pig
Citrobacter rodentium	•					
Klebsiella oxytoca	•	•	•	•	•	•
Klebsiella pneumoniae	•	•	•	•	•	•
Pseudomonas aeruginosa	•	•	•	•	•	•
Salmonella spp.	•	•	•	•	•	•
Campylobacter spp.					•	
Campylobacter coli					•	
Campylobacter jejuni					•	
Other bacteria*	•	•	•	•	•	•

**If this test is ordered you will be notified if other bacteria are found.*

Additional Microbiology Services

Abscess/lesion culture
Aerobic culture
Anaerobic culture
Antimicrobial Sensitivities
Blood culture
Fungal culture
MALDI-TOF identification

** Euthanasia and collection fees may apply with live animal submissions.*

Surface Testing

Environmental swab (culture)
RODAC® plate count
RODAC® plate count with identification

Environmental Monitoring

Learn More

Microbial/bioburden (count)*
Sterility (+/- determination)*
Water pH

** Sample types include water, rodent feed, and rodent bedding. Subculture identification per colony upon request.*

Rodent and Rabbit Parasitology

Learn More

Samples (e.g., feces, swabs, or tapes) collected at your facility can be submitted directly to our laboratory for testing. Once you are ready to submit samples, visit LTM™ to create your order online.

Sample Type	Test
Feces*	Fecal concentration centrifugation (FCC)
Fur swab*	Samples (feces and/or swabs) can be collected and submitted for parasitology PCR testing – see relevant species page for available PRIA tests.
Live animal	Direct exam for ectoparasites
	Direct exam for endoparasites
	Wet mount for protozoa

** Up to eight samples for FCC or 10 samples for PCR can be pooled and tested as a single group with one result reported.*
***Note:** Please refer to the PCR section for available assays.*

Necropsy and Histopathy Services

Services range from routine diagnostic assessment to pathology support or custom protocol design with report. We also offer necropsy training for your staff.

Sample Types	Service
Live animal	Full diagnostic histopathology
	Gross necropsy exam
	Whole body perfusion
	Blood collection
	Organ survey (basic, extended)
	Organ culture
	Organ weight
	Body weight
	Snap freezing tissues
Fixed tissue and/or paraffin block	Extensive customized tissue collection protocols
	Routine H&E and specialized staining techniques
	Trim/cassette/embed
	Slide preparation and evaluation
	Decal: large and small tissues
	Cassette to paraffin block
Slide	Interpretation
	Digital images

Microbiome Diagnostic Services

Learn More

Comprehensive Germ-Free Colony Health Screening

The single most important specification for germ-free mouse colonies is that they remain free of microbes. Charles River offers and recommends that both culture-dependent and culture-independent screening methods be used to assure that even fastidious bacteria that are difficult to isolate are detected. Fecal pellets collected per our recommended specifications can be submitted for all methods of germ-free monitoring described below. For a more complete assessment, whole animals, antemortem samples, or environmental samples can also be submitted to our laboratory for standard health monitoring procedures. Our health monitoring experts are available to provide guidance on establishing a routine germ-free assessment program specific to your colony and research.

Anaerobic and Aerobic Culture

We use state-of-the-art anaerobic chambers, not canister methods, to provide the most sensitive isolation procedures for fastidious obligate anaerobic bacteria, which may take up to 14 days to grow. Fecal pellets submitted for culture are also screened for motile bacteria by wet mount analysis, a culture-independent method, upon arrival.

16S Ribosomal RNA PCR

This PCR screening, uses broadly reactive PCR primers to detect all bacterial phyla. This culture independent assay uses technology that prevents false-positive detection commonly caused by other PCR detection methods.

16S Next Generation Sequencing (NGS)

16S Next Generation Sequencing (NGS) analysis provides a snapshot of the bacteria colonizing the intestinal tract of your research mice using GI contents or fecal pellets. 16S NGS analysis is an important part of routine monitoring of your research colonies' microbiome to verify that custom or complex bacteria consortia remain stable. 16S NGS can also be used for microbiome investigations that require monitoring of control and treatment groups before, during, and after experiments. The relative abundance of bacteria at multiple taxonomical levels is provided for each sample so that increases and decreases in bacteria abundance can be determined. We partner with One Codex to provide best-in-class microbiome data analysis including curated database classification and microbial community profiling tools in your own custom data portal.

Services	Tests
Germ-Free Testing	Anaerobic and aerobic culture of fecal pellets or isolator samples with identification via MALDI-TOF
	Motility testing by wet mount analysis of cecum (live animal only), feces, or swab
	Mycotic (i.e., fungal) culture of cage/isolator swab with optional identification
	16S ribosomal RNA PCR of feces
Standard Health Evaluation: Whole animal, antemortem, and environmental screening	Necropsy with histology of gross lesions
	Aerobic culture of upper respiratory and gastrointestinal tracts with identification via MALDI-TOF mass spectrometry
	Anaerobic culture of cecal contents with identification via MALDI-TOF mass spectrometry
	Serologic viral antibody detection
	PCR Rodent Infectious Agent (PRIA®) testing of postmortem, antemortem, and environmental sampling for viral, bacterial, and fungal/parasitic agents
Microbiome Sequencing	16S rRNA bacterial sequencing of fecal pellets or GI contents

Simian (Nonhuman Primate) Health Surveillance

Adeno-associated Virus (AAV) Neutralizing Antibody Testing

For gene therapy studies in nonhuman primates (NHPs), adeno-associated viruses (AAVs) are used to shuttle the genes into cells. However, neutralizing antibodies (NAb) in their blood against these AAV carriers can unwittingly interfere with success of clinical studies. We provide AAV NAb services for prescreening of NHPs using their serum prior to enrolling them in studies. Click below to view a list of available serotypes and download their respective qualification reports.

Learn More

Service	Item	Included
Serology	NAb screening assay (+ or – at dilution of 1:10, 1:20, and 1:40)	Qualitative assay at various dilutions to detect the presence of pre-existing neutralizing antibodies.
	NAb titer assay (serum titration from 1:10-1:5,120)	Quantitative assay to measure concentration or titer of antibody in serum.

NHP Health Surveillance Testing

Custom panels and individual agent testing are available upon request. Services available for samples only; whole animals are not accepted.

Service	Item	Included
Serology	Macaque Tracking Profile without MV	SIV*, SRV*, STLV, HBV
	Macaque Tracking Profile	SIV*, SRV*, STLV, HBV, MV
	Macaque Assessment Profile	Macaque tracking profile and SFV, SCMV, MRV, SVV, SV-40
	Flavivirus Profile	Dengue virus, West Nile virus, Zika virus
	TB Plex	Tuberculosis multiplex assay
	COVID-Plex	
PCR	Blood PCR Panel	*Plasmodium* (Malaria), Lymphocryptovirus (Old World), MRV (Macaca papio rhadinovirus-2), SRV, SIV, SFV, STLV
	Fecal PCR Panel	*Campylobacter, Helicobacter*, Sarbecovirus, *Salmonella, Shigella, Yersinia (Y. enterocolitica, Y. pseudotuberculosis)*†
	Flavivirus PCR Panel	Dengue virus, West Nile virus, Zika virus
	Sarbecovirus	
Microbiology	NHP culture for *Salmonella spp.*	
	NHP culture for *Shigella spp.*	
	NHP culture for Yersinia spp.	
	NHP culture for *Campylobacter spp*.	
	Antimicrobial Susceptibility	
Parasitology	Fecal concentration centrifugation (FCC)	Detects ova and cysts
Blood Typing	NHP blood typing	NHP blood typing by PCR

** Multiple assays are included, both whole-viral lysate and highly purified recombinant antigens.*
† Available for Old and New World.

Simian (Nonhuman Primate) Health Surveillance

Learn More

Available Agents for Add-On	Old World	New World	Serology	PCR	PCR Sample type
Filovirus	•		•		n/a
Enterobius (pinworm)	•			•	Fecal swab
Mycoplasma genus	•	•		•	Fecal swab, saliva/oral swab
Parainfluenza virus 5 (PIV-5 [SV-5])	•		•		n/a
Trypanosoma cruzi (Chagas)	•		•	•	Blood, serum, plasma
Hepatitis A virus (HEP-A)	•		•	•	Fecal swab, serum, plasma
Epstein-Barr virus (EBV)	•		•	•	Saliva/oral swab, blood
Giardia	•	•		•	Fecal swab
Simian *Cryptosporidium*	•	•		•	Fecal swab
Simian cytomegalovirus (SCMV)	•		•	•	Blood, serum, plasma
Simian varicella virus (SVV)	•			•	Blood, skin swab
Herpes B virus (HBV)	•		•	•	Blood, serum, plasma
Lymphocryptovirus	•	•	•	•	Saliva/oral swab, blood
Yellow fever	•		•	•	Blood, serum, plasma
Saimiriine herpesvirus 1 (SaHV-1)		•	•	•	Blood
Saimiriine herpesvirus 2 (SaHV-2)		•	•	•	Blood
Squirrel monkey CMV (SqCMV)		•	•	•	Blood
Measles	•		•		n/a
Tuberculosis (TB)	•		•	•	Lung, saliva/oral swab
Hepatitis B - surface antigen	•		•		n/a
Hepatitis B - surface antigen antibody	•		•		n/a
Hepatitis B - core antibody	•		•		n/a
NEW *Burkholderia pseudomalli/mallei*	•	•			Fecal swab, blood, other*
Campylobacter	•	•		•	Fecal swab
Group A Rotavirus	•	•		•	Fecal swab
NEW Monkeypox	•	•		•	Fecal swab
Macaca papio rhadinovirus-2	•	•		•	Saliva/oral swab, blood
Simian immunodeficiency virus (SIV)	•		•	•	Blood
Simian retrovirus (SRV)	•		•	•	Blood
Simian T-cell Lymphotropic Virus 1/2 (STLV 1/2)	•		•	•	Blood

** Please inquire*

Zebrafish Health Surveillance

Learn More

Charles River offers zebrafish health surveillance for the research community.

Service	Test Name	Includes	Sampling Unit
Multiple Services	HM Plus	Necropsy Histopathology workup Aerobic culture PCR for common infectious agents	Visit LTM™ for details
Histopathology	Processing (with H&E Stain)	Trim, embed, create slides, and H&E staining	Per fish
	Special Staining	Multiple special stains available upon request	Per fish
	Pathologist Interpretation	Pathologist interpretation of stained slides	Per fish
Infectious Disease PCR	Mycobacterium Panel	*Mycobacterium abscessus* *M. chelonae* *M. fortuitum* *M. gordonae* *M. haemophilum* *M. marinum* *M. peregrinum* *M. saopaulense*	Tank biofilm swabs Fish (allows pooling up to 5 fish) Sump/Water sample
	Basic Panel	Mycobacterium Panel *Aeromonas hydrophila* *Pseudocapillaria tomentosa* *Pseudoloma neurophilia*	Tank biofilm swabs Fish (allows pooling up to 5 fish) Sump/Water sample
	Surveillance Plus Panel	Basic Panel *Edwardsiella ictaluri* *Flavobacterium columnare* *Ichthyophthirius multifillis* *Piscinoodinium pillulare* *Pleistophora hyphessobryconis* *Saprolegnia brachydanis*	Tank biofilm swabs Fish (allows pooling up to 5 fish) Sump/Water sample
	Custom Panel	Visit LTM™ to select from list of zebrafish pathogen assays	Tank biofilm swabs Fish (allows pooling up to 5 fish) Sump/Water sample
	Single Agent Test	*Myxidium streisingeri* *Pseudomonas fluorescens* Zebrafish Picornavirus *Aeromonas dhakensis* *Plesiomonas shigelloides (Aeromonas shigelloides)* *Mycobacterium gordonae* *Mycobacterium saopaulense* Infectious spleen and kidney necrosis virus	Tank biofilm swabs Fish (allows pooling up to 5 fish) Sump/Water sample
		Once you are ready to submit samples, visit LTM™ to create your order online.	

Xenopus Health Surveillance

Charles River offers Xenopus Infectious Disease PCR for the research community.

Agent	Essential	Comprehensive	Recommended Sample types
Ranavirus (includes Frog virus 3)	•	•	fecal/detritus, kidney/liver/spleen
Capillaria xenopi (Pseudocapillaroides xenopi)	•	•	fecal/detritus, dorsal skin swab
Batrachochytrium dendrobatidis	•	•	toe web skin/ventral skin swab
Mycobacterium chelonae	•	•	fecal/detritus, biofilm swab, lesion swab, kidney/liver
Mycobacterium marinum	•	•	fecal/detritus, biofilm swab, lesion swab, kidney/liver
Mycobacterium gordonae	•	•	fecal/detritus, biofilm swab, lesion swab, kidney/liver
Aeromonas hydrophila		•	fecal/detritus, biofilm swab, skin swab, water filter, liver/kidney/spleen
Aeromonas dhakensis		•	fecal/detritus, biofilm swab, skin swab, water filter, liver/kidney/spleen
P. aeruginosa		•	fecal/detritus, skin swab, water filter
Salmonella species		•	fecal/detritus
Cryptosporidium species		•	fecal/detritus

Ferret Health Surveillance

Learn More

Services available for samples only; whole animals are not accepted. Once you are ready to submit samples, visit LTM™ to create your order online. Custom profiles and single agent testing are available upon request.

Service	Item
Infectious Disease PCR	Custom panel (two or more agents)
	Single agent test
Histology	Custom histology
Parasitology	Custom parasitology
Microbiology	Custom culture and identification

Ferret Assays

Agent	PCR	Microbiology
Aleutian disease virus (parvovirus)	•	
Canine distemper virus (paramyxovirus)	•	
Ferret Epizootic Catarrhal Enteritis (ECE)	•	
Group A rotavirus	•	
Influenza A (INFA)	•	
Beta-hemolytic *Streptococcus* (group B)	•	•
Beta-hemolytic *Streptococcus* (group C)	•	•
Beta-hemolytic *Streptococcus* (group G)	•	•
Bordetella bronchiseptica	•	•
Campylobacter genus (C. coli, C. jejuni)	•	•
Clostridium piliforme	•	
Helicobacter genus (H. mustelae)	•	
Klebsiella oxytoca	•	•
Klebsiella pneumoniae	•	•
Lawsonia intracellularis	•	
Mycoplasma genus	•	
Mycoplasma mustelae	•	
Pasteurella multocida	•	•
Salmonella genus	•	•
Sarbecovirus	•	
Staphylococcus aureus	•	•
Staphylococcus xylosus	•	
Streptococcus pneumoniae	•	•
Cryptosporidium	•	
Giardia genus (G. lamblia, G. muris)	•	
Toxoplasma gondii	•	

MFIA® Reagents

HemaTIP™ microsampler collection method is available to MFIA® reagent customers for in-house use only. Commercial use of Charles River reagents requires specific licensing. Please inquire for further details.

MFIA® Bead Panels

Each unit is sufficient for one plate of 96 tests. Sample and system suitability controls included in profile mixture. Custom bead mixtures are available upon request. Click here to review the testing procedures in the Methods Manual and to place an order.

Item	Tests Included*†
COVID-Plex	SARS-Cov-2 (COVID-19) multiplex assay‡
Mouse Parvovirus	MPV-1, MPV-2, MPV-5, MVM, NS-1
Mouse Prevalent	Mouse parvovirus profile and MHV, MNV, TMEV (GDVII), EDIM (ROTA-A)
Mouse Tracking	Mouse prevalent profile and SEND, PVM, REO, MPUL
Mouse Assessment	Mouse tracking profile and LCMV, MAV, ECTRO, K, POLY
Mouse Assessment Plus	Mouse assessment profile and MCMV, HTNV (HANT), ECUN, CARB, CPIL, MTLV, PHV, LDV
Rat Prevalent	RPV, H-1, KRV, RMV, NS-1, SDAV, RTV, PCAR
Rat Tracking	Rat prevalent profile and SEND, PVM, REO, MPUL
Rat Assessment Plus	Rat tracking profile and LCMV, MAV, HTNV (HANT), ECUN, CARB, CPIL, IDIR (ROTA-B), RatPyV2
Macaque Tracking	SIV†, SRV†, STLV, HBV, MV
Macaque Assessment	Macaque tracking profile and SFV, SCMV, MRV, SV-40, SVV
Macaque TB Plex	Tuberculosis multiplex assay
Baboon Tracking	HPV-2, STLV, SIV, SA-11, MV
African Green Tracking	SA-8, STLV, SIV, SA-11, MV
Rabbit Assessment	ECUN, CARB, CPIL, PIV-1, PIV-5 (PIV-2), REO, ROTA, LCMV, TOXO
Guinea Pig Assessment	SEND, PIV-5, PVM, REO, LCMV, ECUN, PIV-3, MPUL, GCMV, GPAV
Hamster Assessment	SEND, PIV-5, PVM, REO, LCMV, ECUN
Poultry Tracking	HEV, AE, ANV, PMV-2, REO, F. pox, IBV, IBDV, ALV-A, ALV-B, ALV-J, NDV, AI, ILT
Poultry Assessment Plus	Poultry tracking profile and Adeno GRP I, Adeno GRP III, ROTA, MD, REV, MG, MS, *Salmonella pullorum-gallinarum*

** Mouse profiles: multiple assays are included. MPV: several recombinant viral coat proteins (VP2) to detect seroconversion to MPV-1, MPV-2, and MPV-5. MHV: a recombinant nucleocapsid (N) protein and two highly purified recombinant antigens. MAV: highly purified whole-viral lysate antigens to both FL and K87.*

† Macaque profiles: multiple assays included, both whole-viral lysate and highly purified recombinant antigens.

‡ Available for multiple species.

MFIA® Control Sera Panels

Each unit is sufficient for five plates and includes high and low range, negative, and diluent controls. Contact Charles River to place your order.

Item
"Mouse A" for Parvovirus, Prevalent, Tracking
"Mouse B" for Assessment, Assessment Plus
"Rat A" for Prevalent, Tracking
"Rat B" for Assessment Plus
Macaque Tracking
Macaque Assessment
Macaque TB Plex Multiplex Assay
Baboon Tracking
African Green Tracking
Rabbit Assessment
Guinea Pig Assessment
Hamster Assessment
Poultry Tracking
Poultry Assessment Plus

MFIA® Supplemental Reagents

Each unit is sufficient for five plates. Contact Charles River to place your order.

Item
Conjugate for mouse/rat samples
Conjugate for simian samples
Conjugate for rabbit samples
Conjugate for guinea pig samples
Conjugate for hamster samples
Conjugate for poultry samples
Primary diluent (rodent, rabbit, and poultry)
Primary diluent (simian)
Elution buffer
Streptavidin-R-Phycoerythrin (SPE)

ELISA Reagents

Commercial use of Charles River reagents requires specific licensing. Please inquire for further details.

Available ELISA reagents for mouse, rat, guinea pig, and hamster are found on the following page. For nonhuman primate, SRV, STLV, MV, and HBV are available; outside the United States, customers must obtain a CITES permit to import control sera for MV. Contact Charles River to place your order.

Item	Approximately
96-well coated plate	48 tests
Conjugate	10 plates
Control sera – positive (high or low score)	10 plates
Control sera – negative	10 plates

IFA Reagents

Commercial use of Charles River reagents requires specific licensing. Please inquire for further details.

Available IFA reagents for mouse, rat, guinea pig, hamster, rabbit, and gerbil are shown on the following page; view our online catalog for the list of available IFA slides for each species. For nonhuman primate, the following agents are available: SIV, STLV, HVP-2, SFV, SCMV, SV-40, MV, SRV-2, SRV-5, HEP-A, and MRV. Outside the United States, customers must obtain a CITES permit to import control sera for the following agents: SFV, SV-40, MV. Contact Charles River to place your order.

Item	Approximately
18-well coated slide	18 tests
Conjugate	180 tests
Control sera – positive or negative	10 slides

Available Rodent ELISA and Rodent/Rabbit IFA Reagent Assays

Commercial use of Charles River reagents requires specific licensing. Please inquire for further details.

	Platform	
Agent	**ELISA**	**IFA**
CARB	•	•
CPIL	•	•
ECTRO	•	•
ECUN	•	•
EDIM	•	•
GDVII	•	•
H-1	•	•
HTNV (HANT)	•	•
K	•	•
KRV	•	•
LCMV	•	•
MARTH		•

	Platform	
Agent	**ELISA**	**IFA**
MAV	•	•
MCMV	•	•
MHV	•	•
MNV	•	•
MPUL	•	•
MPV	•	•
MTLV		•
MVM	•	•
NS-1	•	
PCAR	•	•
PHV	•	•
PIV-3	•	•

	Platform	
Agent	**ELISA**	**IFA**
PIV-5	•	•
POLY	•	•
PVM	•	•
REO	•	•
RMV	•	
RPV	•	•
RTV	•	•
SDAV	•	•
SEND	•	•
TOXO		•

Cell Line & Research Biologics Sample Collection Kit

The new Cell Line & Research Biologics Sample Collection Kit is designed to make submitting your samples as quick and easy as possible.

Features of the new kit, which may be requested using our Shipping Supply Request form, include:

- Tubes with buffer and CLEAR instructions in a ready-to-use kit
- A buffer that stabilizes samples during shipment. View the qualification summary from studies completed by our scientists.
- Shipment at ambient temperature; no dry ice needed

Learn More

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

Our CLEAR (cell line examination and report) PCR Panels are performed non-GXP; this service is available for research purposes only. Once you are ready to submit samples, visit LTM™ to create your order online.

Agent	Mouse Essential Panel	Rat Essential Panel	Mouse/Rat Comprehensive Panel
Sarbecovirus	•	•	•
Vesivirus	•		•
C. bovis	•	•	•
M. pulmonis		•	•
Mycoplasma genus	•	•	•
Murine norovirus (MNV)	•		•
Mouse parvoviruses* (MPV 1-5, MVM)	•		•
Mouse hepatitis virus (MHV)	•		•
Murine chapparvovirus (MuCPV, MKPV, RoChPV-1)	•		•
Reovirus (type 1 & 3) (REO)	•	•	•
Lymphocytic choriomeningitis virus (LCMV)	•	•	•
Lactate dehydrogenase-elevating virus (LDV)	•	•	•
Murine rotavirus (EDIM [ROTA-A])	•		•
Theiler's murine encephalomyelitis virus (TMEV [GDVII])	•	•	•
Mousepox (ectromelia) (ECTRO)	•		•
Hantavirus hantaan (HTNV [HANT])	•		•

Agent	Mouse Essential Panel	Rat Essential Panel	Mouse/Rat Comprehensive Panel
Hantavirus seoul (SEO)		•	•
Polyoma virus (POLY)	•	•	•
K virus (K)			•
Adenovirus type 1 & 2 (MAV-1 & MAV-2)	•	•	•
Mouse cytomegalovirus (MCMV)			•
Mouse thymic virus (MTLV)			•
Pneumonia virus of mice (PVM)			•
Sendai virus (SEND)	•	•	•
Rat cytomegalovirus (RCMV)		•	•
Rat theilovirus (Theiler's-like virus of rats [RTV])		•	•
Rat parvoviruses* (RPV, KRV, RMV, H-1)		•	•
Rat rotavirus (IDIR [ROTA-B])		•	•
Murine Sapovirus*			
Murine Alphacoronavirus*			
Boone Cardiovirus*			
Murine Kobuvirus 1*			
Murine Kobuvirus 2*			
Murine Picornavirus*			

** Can be ordered as additional assay*

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

Our CLEAR (cell line examination and report) PCR Panels are performed non-GXP; this service is available for research purposes only. Once you are ready to submit samples, visit LTM™ to create your order online.

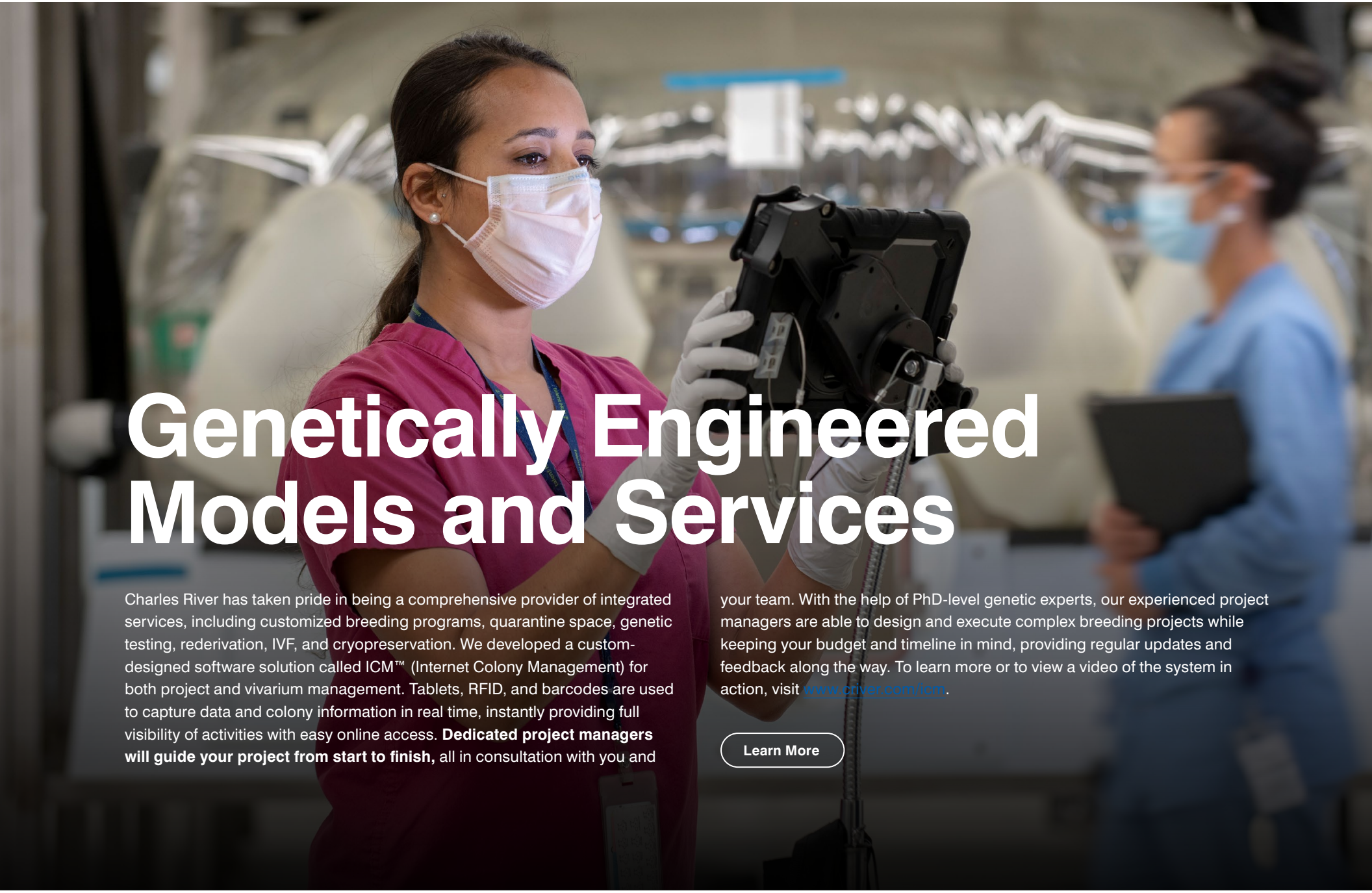
Agent	Human HEP/HIV	Human Essential	Human Comprehensive
Sarbecovirus		•	•
Polyomavirus (John Cunningham virus)		•	•
Polyomavirus (BK virus)		•	•
Herpesvirus type 6		•	•
Herpesvirus type 7		•	•
Herpesvirus type 8		•	•
Parvovirus B19		•	•
Epstein-Barr virus		•	•
Hepatitis A virus	•	•	•
Hepatitis B virus	•	•	•
Hepatitis C virus	•	•	•
Papillomavirus type 16		•	•
Papillomavirus type 18		•	•
Human T-lymphotropic virus (1 & 2)		•	•
Human cytomegalovirus		•	•
Human immunodeficiency virus type 1	•	•	•
Human immunodeficiency virus type 2	•	•	•
Adeno-associated Virus 2 (AAV2)		•	•
Adeno-associated Virus 9 (AAV9)		•	•
Human adenovirus		•	•
Human foamy virus		•	•
Corynebacterium bovis	•	•	•
Mycoplasma (genus) (including *Acholeplasma laidlawii*)	•	•	•
Lymphocytic choriomeningitis virus			•
Hantavirus hantaan			•
Hantavirus seoul			•
Herpes simplex 1		•	•
Herpes simplex 2		•	•

Contamination CLEAR

Our CLEAR (cell line examination and report) PCR Panels are performed non-GXP; this service is available for research purposes only. Once you are ready to submit samples, visit LTM™ to create your order online.

Detect contamination of cell lines with cells of another species.

Item
Stand-alone service
Add to any rodent or human CLEAR panel or *Mycoplasma* PCR



Genetically Engineered Models and Services

Charles River has taken pride in being a comprehensive provider of integrated services, including customized breeding programs, quarantine space, genetic testing, rederivation, IVF, and cryopreservation. We developed a custom-designed software solution called ICM™ (Internet Colony Management) for both project and vivarium management. Tablets, RFID, and barcodes are used to capture data and colony information in real time, instantly providing full visibility of activities with easy online access. **Dedicated project managers will guide your project from start to finish,** all in consultation with you and your team. With the help of PhD-level genetic experts, our experienced project managers are able to design and execute complex breeding projects while keeping your budget and timeline in mind, providing regular updates and feedback along the way. To learn more or to view a video of the system in action, visit www.criver.com/icm.

Learn More

Breeding Services

Learn More

Charles River provides off-site space for holding, breeding, and developing genetically engineered mouse and rat colonies. All colonies are assigned a dedicated project manager and clients are granted access to Charles River's innovative Internet Colony Management (ICM™) system. Whether you want to simply maintain a line, produce regular animal shipments for your studies, or backcross your strain to a different genetic background, each breeding colony is scalable to your specific research needs.

Service	Requirements	Deliverables	Estimated Timeline
• Breeding • Husbandry • Mating • Weaning • Dedicated project manager	Project-based	Project-based	Project-based
MAX-BAX® speed congenic strain production service	2-3 homozygous or heterozygous males between 12 weeks and six (6) months of age	All fully congenic mice produced	15 months

Quarantine Services

Learn More

Charles River provides dedicated space reserved for assessing the health profile of animals coming from outside institutions. Charles River's PRIA®-based quarantine program offers fast and comprehensive test results in less than a month. We can also develop custom protocols to meet your animal facility requirements.

Service	Requirements	Deliverables	Estimated Time for Results
PRIA® rapid quarantine	Up to 10 mice or rats	Direct animal samples tested via Surveillance Plus PRIA®	Two weeks
Sentinel-based quarantine	Project-based	Project-based	Project-based
Custom quarantine	Project-based	Project-based	Project-based

Transgenic Model Creation

Charles River has joined forces with leading genomic engineering providers to deliver a complete and integrated solution for mouse and rat model creation. Our combined expertise provides an optimum environment for creating, characterizing, preserving, and distributing your transgenic lines.

CRISPR/Cas9 Genome Editing for Mice and Rats

Learn More

Our team of scientists work with clients to determine which technique is best suited to achieve their goals. When needed, a combination of techniques may be applied.

Services offered	Deliverable
• CRISPR/Cas9 knock-out • SNP modification • Knock-in • Conditional knock-out • Transgenes	• Scoping conversation on the design and strategy of your model • Guide RNA design and validation • Microinjection into mouse or rat embryos • Birth and founder screening • Breeding/delivery of F1 animals

Microinjection Services

Learn More

Charles River can help you bridge the gap from *in vitro* to *in vivo* models. Our dedicated team will prepare and inject your ES cells or genetic material (DNA, CRISPR, ES recombinant clones). Choose the appropriate package described below and provide us your biological material to receive your VAF/Elite® mice.

Service	Description	Deliverables
ES cells		
ES cell injection (Partial)*	• Expansion of ES cells for injection and freezing • ES cells injected into blastocysts • Reimplantation into VAF/Elite® foster females • Husbandry • Weaning	VAF/Elite® chimeric mice with full health monitoring report
CRISPR		
CRISPR injection (Partial)	• Injection into mouse one-cell embryos • Reimplantation into VAF/Elite® foster females • Husbandry • Weaning • Biopsies for genetic testing	VAF/Elite® F0 founder mice with full health monitoring report
DNA		
Plasmid or BAC (Partial)	• Injection into one-cell embryos • Reimplantation into VAF/Elite® foster females • Husbandry • Weaning • Biopsies for genetic testing	VAF/Elite® F0 founder mice with full health monitoring report

NOTE: CRISPR-Cas9 used under licenses to granted and pending US and international patents from The Broad Institute and ERS Genomics Limited.

** Breeding 1 generation for germline transmission available upon request.*

Rederivation and IVF Rapid Expansion Services

Learn More

Rederivation can eliminate unwanted parasites, viruses, bacteria, and other opportunistic agents from research colonies. IVF Rapid Expansion can generate large quantities of animals in a single generation. We offer a number of options based on the genetics of your strain and/or the quantity of animals available.

Service	Animal Requirements*	Deliverables/Description	Estimated Timeline
Sperm rederivation with health report	Mouse: • 2 males, < 6 months old • 10-15 females, 3-4 weeks old (strain specific) Rat: N/A	• Minimum 10 offspring • Complete health report • VAF/Elite® mice	12-15 weeks
IVF rapid expansion	Project-based	• Quantity based on parameters of the project • Complete health report • VAF/Elite® mice	12-15 weeks
Embryo rederivation with health report	Mouse: • 2 males, < 6 months old • 10-15 females, 3-4 weeks old Rat: • 4 males, < 6 months old • 10-15 females, 6-15 weeks old	• Minimum 10 offspring • Complete health report • Conventional colony held until project completion • For homozygous x homozygous strains • VAF/Elite® mice/rats	12-15 weeks
Embryo rederivation with homozygous expansion breeding	Minimum of five breeding pairs	• Minimum 10 offspring • Complete health report • Conventional colony held until project completion • For homozygous x homozygous strains • VAF/Elite® mice/rats	6-9 months
Rapid rederivation – sperm or embryo	Mouse: • 2 males, < 6 months old • 10-15 females, 3-4 weeks old Rat: N/A	• Minimum two visibly pregnant embryo recipient females	6 weeks

Cryopreservation

Learn More

Cryopreservation provides a permanent solution to archiving genetically engineered lines no longer being actively used, as well as safeguarding valuable lines in the event of a problem with the health or genetics of the line or a major disaster.

Service	Animal Requirements	Deliverables	Description
Embryo cryopreservation	Mouse: • 10 males, < 6 months old • 20 females, 3-4 weeks old* Rat: • 10 males, < 6 months • 20 females, 6-15 weeks old*	• Pre- and post-thaw QC • 250 embryos (heterozygous lines) • 150 embryos (homozygous lines)	For mouse and rat strains
Embryo cryopreservation with homozygous expansion breeding	Five homozygous breeding pairs	• Pre- and post-thaw QC • 150 embryos** • Homozygous expansion breeding	Homozygous embryo cryopreservation with preliminary expansion breeding for mouse and rat strains
Sperm cryopreservation	Two males between 12 weeks and 6 months old (proven breeder preferred)	• Pre- and post-thaw QC • 15 straws preserved	Cryopreservation of sperm from two males (mice only)
Germplasm cryostorage			Secure cryostorage in two independent facilities

** May require multiple batches of 20 females shipped at regular intervals in order to meet goal.*

*** Based on individual breeding performance, additional fees may apply.*

Cryorecovery

Learn More

While cryopreserving your valuable genetically engineered animals is an important part of protecting your research against unforeseen events, having the ability to recover live animals from frozen stock quickly and efficiently is equally critical to safeguarding your lines.

Service	Description	Deliverables	Timeline
Embryo reconstitution	• 60 embryos • 3-4 embryo transfers	• Minimum of 10 offspring from cryopreserved embryos.* • Complete health report • VAF/Elite® mice/rats	10-12 weeks
Sperm reconstitution	Live animal recovery from cryopreserved sperm (mice only)	• Minimum of 10 offspring from cryopreserved sperm.* • Complete health report • VAF/Elite® mice	10-12 weeks

**Cryorecovery guaranteed only for strains cryspreserved and stored by Charles River.*

Advanced Assisted Reproduction and Toxicity Testing

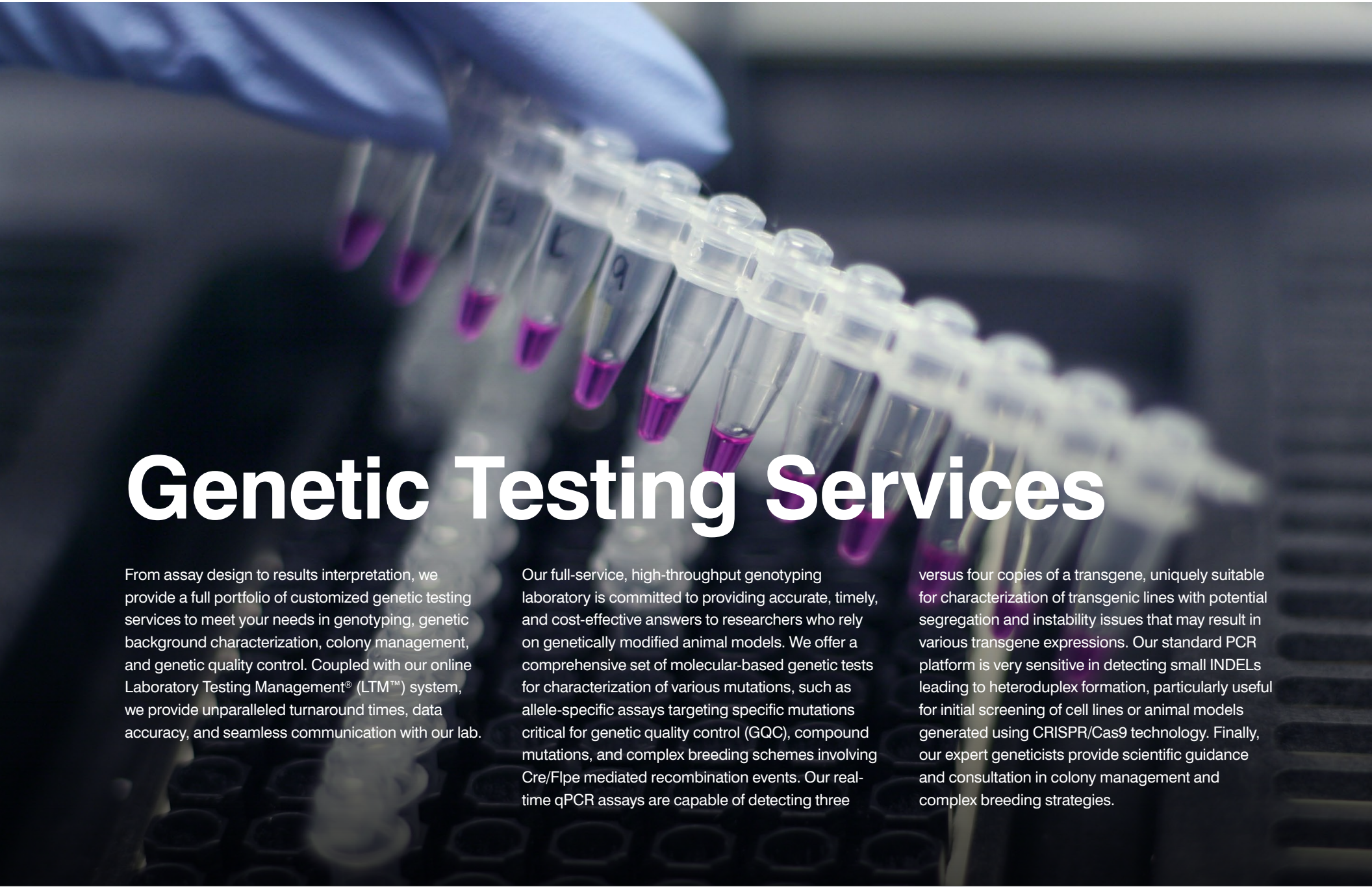
Learn More

Charles River continually invests in new innovations and sophisticated techniques within our embryology program. A comprehensive Mouse Rescue Package is offered to help aid in the rescue options for strains that experience unexpected breeding difficulties. In addition, Charles River offers laser-assisted *in vitro* fertilization to aid in embryo production using IVF technology for non-optimal sperm samples.

Charles River's high-throughput embryology laboratory offers non-regulated testing using both mouse embryo assay (MEA) and human sperm assay (HSA) to screen media, reagents, and disposable laboratory supplies. These bioassays are used for assessing functionality and toxicity of the client's media and materials.

Service	Requirements/Description	Deliverables	Timeline
Mouse rescue package	• Recovery of a mouse line that is having difficulties producing offspring	• All offspring produced • Sperm cryopreservation if applicable • Complete health report on offspring • VAF/Elite® mice	15 weeks
MEA (Mouse Embryo Assay)*	• The MEA is used for toxicity and functionality testing of media, labware, disposables, or any device which may encounter gametes or embryos • Fresh or frozen one- or two-cell embryos from F1 hybrid cross • Minimum of 25 embryos per test article and 25 control embryos	• Assessment of embryos at 72, 96, or 120 hours • Minimum of 80% blastocyst development required for passing test • Final Report • One failure repeat at no charge	7 days
HSA (Human Sperm Assay)	• The HSA is used for toxicity and functionality testing of media, labware, disposables, or any device which may encounter gametes • Frozen vial of human sperm	• Assessment of sperm motility at 0 and 24 hours • Cryosurvival Index calculation • Sperm Motility Recovery Index calculation	3-5 days

** A discussion with our embryology laboratory is required prior to testing*



Genetic Testing Services

From assay design to results interpretation, we provide a full portfolio of customized genetic testing services to meet your needs in genotyping, genetic background characterization, colony management, and genetic quality control. Coupled with our online Laboratory Testing Management® (LTM™) system, we provide unparalleled turnaround times, data accuracy, and seamless communication with our lab.

Our full-service, high-throughput genotyping laboratory is committed to providing accurate, timely, and cost-effective answers to researchers who rely on genetically modified animal models. We offer a comprehensive set of molecular-based genetic tests for characterization of various mutations, such as allele-specific assays targeting specific mutations critical for genetic quality control (GQC), compound mutations, and complex breeding schemes involving Cre/Flpe mediated recombination events. Our real-time qPCR assays are capable of detecting three versus four copies of a transgene, uniquely suitable for characterization of transgenic lines with potential segregation and instability issues that may result in various transgene expressions. Our standard PCR platform is very sensitive in detecting small INDELs leading to heteroduplex formation, particularly useful for initial screening of cell lines or animal models generated using CRISPR/Cas9 technology. Finally, our expert geneticists provide scientific guidance and consultation in colony management and complex breeding strategies.

Genotyping

Learn More

All assays are custom designed to optimize specificity. Once the assay has been validated, a final report is provided to the customer.

	Method							
Service	**Allele-Specific PCR**	**Generic PCR**	**qPCR (real-time)**	**qPCR (endpoint)**	**LOA* qPCR**	**SNP† Assay**	**LRPCR‡**	**Sequencing**
Zygosity testing for targeted mutation	•	•		•	•	•		
Zygosity testing for transgenics			•					
Identification of transgene carriers	•	•		•			•	•
Transgene segregation and instability			•					
Relative transgene copy number determination			•					
Screening CRISPR/Cas9-generated mutations§	•							
Screening of gene targeting event in ES cells					•		•	
Troubleshooting colony issue(s)	•	•	•	•	•	•	•	•

** Loss-of-allele (LOA)*
† Single nucleotide polymorphisms (SNP)
‡ Long-range PCR; an alternative to Southern blot analysis
§ See Efficient Method for Screening CRISPR/Cas9-Generated Mutations section for more information.

Assay Development and Genetic Quality Control (GQC)

Learn More

	Method							
Service	**Allele-Specific PCR**	**Generic PCR**	**qPCR (real-time)**	**qPCR (endpoint)**	**LOA* qPCR**	**SNP† Assay**	**LRPCR‡**	**Sequencing**
Assay transfer and validation Transfer of customer-provided protocol and validation of assay	•	•	•	•	•	•	•	
Assay development Design and validation of a new assay	•		•	•	•	•	•	•
Colony management	Consultation for conditional targeted mutations available upon request.							
Genetic quality control	Consultation available upon request.							

** Loss-of-allele (LOA)*
† Single nucleotide polymorphisms (SNP)
‡ Long-range PCR; an alternative to Southern blot analysis

Background Strain Characterization

Learn More

Service	Description
Mouse MAX-BAX® speed congenics*	Marker-assisted accelerated backcrossing utilizing 384 SNP panel
Background strain characterization (BSC)	Mouse 384 SNP or rat 240 SNP complete background analysis panels
C57BL/6 mouse substrain panel†	128 SNP
SNP QC (mouse and rat panels available)	32-marker assay for contamination detection

** See below 'MAX-BAX® Congenic Strain Production Strategies' for additional information.*
† The 128 SNP panel is used to differentiate between the mouse C57 substrains. Animals should be confirmed C57 congenic (>98% C57 by 384 SNP) prior to testing; the BSC Mouse 384 SNP complete background analysis panel is available for this confirmation step.

Strain-Specific Genetic Variation

Service	Including, but not limited to
Disease model testing*	Foxn1^{nu}, NOD, Prkdc^{scid}, Ly5.1/5.2 (Ptprc), Tyr

** Please contact LabServices@crl.com to inquire on the availability of assays for your particular model.*

MAX-BAX® Congenic Strain Production Strategies

Learn More

Marker-assisted accelerated backcrossing (MAX-BAX®) could save a year and a half or more of breeding by screening the background strain genetics of your research animals and selecting those with the highest percentage of the desired background. Our MAX-BAX® service is a custom microarray platform that utilizes robust fluorescence-based assays. The 384 SNP marker screens are strategically spaced across the genome to analyze common polymorphisms found between inbred strains.

Traditional Backcross	
Generation	Recipient Genome
F1	50.00%
N2	75.00%
N3	87.50%
N4	93.75%
N5	96.88%
N6	98.44%
N7	99.22%
N8	99.61%
N9	99.81%
N10	99.90%

Speed Congenic Backcross	
Generation	Recipient Genome
F1	50%
N2	~80%
N3	~94%
N4	~99%
N5	~100%

Efficient Method for Screening CRISPR/Cas9-Generated Mutations

Learn More

Charles River offers PCR-based screening services for CRISPR/Cas9-generated models to quickly and accurately identify which founders or cell lines carry mutations with small INDELs at the intended targeting site. Our PCR analysis platform based on microfluidic, laser-induced fluorescence technology allows sensitive detection of heteroduplex formation when small INDELs are present, which is the basis for T7 endonuclease digestion, the most commonly used screening method for CRISPR/Cas9-generated mutations. Furthermore, as demonstrated in the figures below, our testing platform combined with our proprietary assays (Figure 1) produce much cleaner data compared to T7 digestion (Figure 2), which often produces background noise, making mutation detection ambiguous. Contact LabServices@crl.com to learn more about this exciting development or obtain a custom quote for your project.

Figure 1. Microfluidic, Laser-induced Fluorescence PCR Analysis

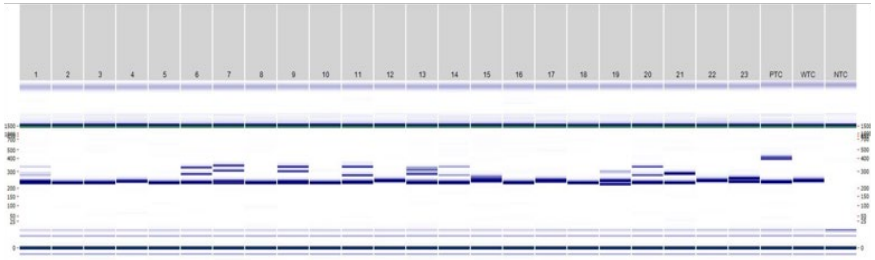
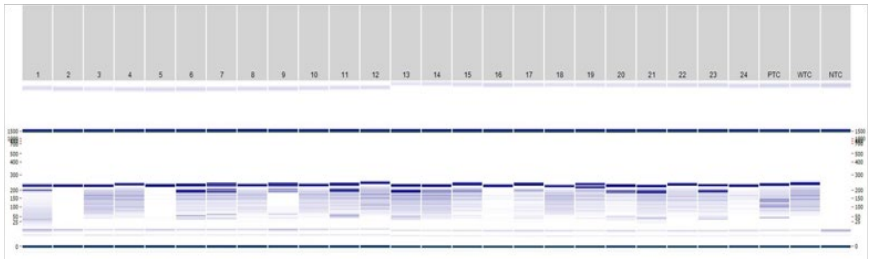


Figure 2. T7 Endonuclease Digestion Analysis

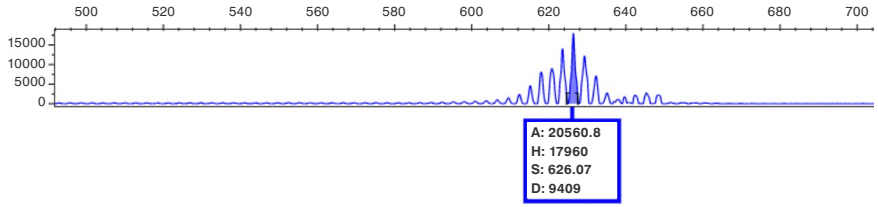


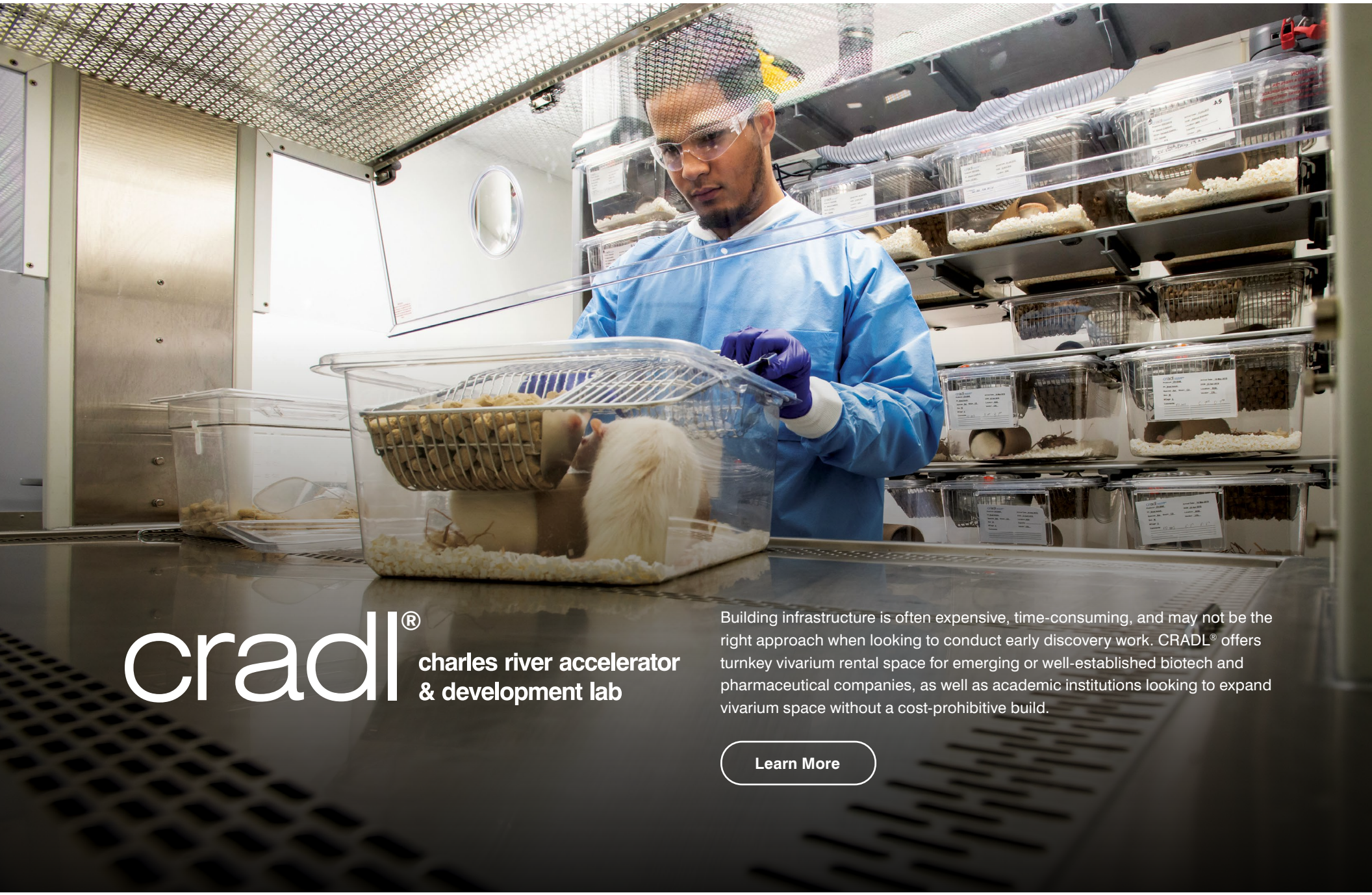
Trinucleotide Fragment Size Analysis

For many disease models, trinucleotide repeat size directly correlates with disease phenotype. It is well known the repeat size can undergo expansion or shrinkage both during meiosis and mitosis. Therefore, it is critical to monitor the repeat size routinely.

At Charles River, we can determine trinucleotide repeat (and other similar repeat) size accurately by a special PCR capable of amplifying through the repeat region, followed by sensitive detection with high resolution through capillary electrophoresis. Repeat size is calculated based on the top peak in the middle of a typical stutter band pattern (see an example electropherogram below).

The current size limit is around 300 trinucleotide repeats.




cradl®
charles river accelerator
& development lab
Building infrastructure is often expensive, time-consuming, and may not be the right approach when looking to conduct early discovery work. CRADL® offers turnkey vivarium rental space for emerging or well-established biotech and pharmaceutical companies, as well as academic institutions looking to expand vivarium space without a cost-prohibitive build.
Learn More

Turnkey

CRADL® combines modern vivarium space with industry-leading expertise in animal husbandry and vivarium management to ensure you have what you need to achieve your research milestones on time and on budget. Clients immediately gain access to supplemental equipment and technical services, and our expert staff are on hand to customize a program to your specific requirements.

Humane Care (IACUC Support)

Charles River's Humane Care Imperative is overseen by our Animal Welfare and Training group. The Institutional Animal Care and Use Committee (IACUC) provides oversight and protocol/amendment review and approval. They ensure that our facilities comply with stringent standards of practice and accepted guidance for the care and use of laboratory animals.

Veterinary Support
Continuous oversight to ensure the health and welfare of all animals at CRADL®.

Technical Services
Experienced staff are available to provide additional study support functions such as dosing, sampling and measurements, study preparation, and more.

Equipment Rental
Standard research equipment is available for use, depending on client requirements.

Procurement Services
Approved vendor-sourced animals and research supply ordering.

Learn More

Flexible

From small or startup companies that realize the value in focusing on their research and partnering with an industry expert to manage day-to-day vivarium functions, to mid-sized to larger institutions that have either outgrown their existing space or are looking to expand their research footprint without building additional infrastructure, our vivarium services are the ideal solution.

CRADL® has several options available depending on your study requirements. Space is available for short- and long-term durations, and can be privately occupied or shared with other partners as a low-cost solution for start-up or pilot research projects.

Shared Rooms
Low-cost solution for start-up or pilot research projects. Holding and procedure rooms are available as shared rooms. A 3-month commitment/contract is available.

Dedicated Rooms
Private-lease rooms for clients looking to conduct studies that can be customized to be dedicated animal holding or procedure rooms. The minimum commitment/contract is six months.

Expanded Suites
These larger rooms are equipped with both animal holding and procedure space to provide clients with a complete solution.

Comprehensive

CRADL® not only provides a turnkey vivarium rental solution, it also grants you access to *in vivo* support services within Charles River, increasing the potential for your research to progress forward. Whether you need to create a unique transgenic model, are looking for histopathology support, or need to design a program that ensures the health and genetic integrity of your research animal colonies is upheld, these services can be added as part of your Charles River total package offering.

Customized *in vivo* support services include:

- Transgenic model creation
- Surgery and pre-conditioning services
- Rapid animal colony development
- Histopathology and tissue collection
- Cryopreservation services
- Animal health surveillance
- Cell line and biologics screening
- Quarantine services
- Animal genotyping services

Learn More

Scientific Advisory Services

Each study is unique and learning from others' successes and failures is paramount in the drug discovery and development process, so we don't make the same mistake twice. Carefully researched and analyzed case studies enable medicinal chemists and pharmaceutical scientists to learn from actual experiments and share their experiences with others. At Charles River our scientists and scientific advisors see thousands of successes and failures each year across a broad range of molecule types and therapeutic areas. These case studies provide insight and inform decisions for future research opportunities, helping us improve the success rate of finding life-saving medicines.

Learn More

Veterinary Pathology

Board-certified veterinary pathologists (VPs) are specially trained to support drug development throughout the development pipeline from target validation to registration. VPs can help clients design and evaluate data from early target validation experiments and recommend early safety biomarkers based on the known pharmacology of the drug or structural alerts from *in silico* data. As the client progresses to lead declaration and optimization, the VP can extend this impact in animal studies supporting these phases. VPs could also help the client position these data for key decision points (i.e., progress to GLP studies). VPs are cross-trained in Discovery and Toxicologic Pathology and understand comparative medicine (animal versus human). Our VPs have specialty training in molecular tools, organ systems, and disease and safety biomarkers.

Collaborative

Your research may come to a critical milestone that requires further expansion of capabilities and infrastructure, or the need to outsource key components of your discovery work. We're strategically positioned to help support you during this time. Our team of experts take a true collaborative approach with you to determine the optimum path to market that fits your program goals and timelines.

Build Infrastructure
Our team of vivarium, scientific, and technical experts are on hand to discuss staffing, training, and vivarium design and planning support.

Outsource Your Next Milestone
Partner with an industry leader in end-to-end integrated drug discovery and safety assessment to ensure the success of your research.

Create a Hybrid Program
Our customizable programs allow you to maintain control of all or part of their research studies, while Charles River is ready to assist when needed.

Resources

Whether you've run into an unfamiliar acronym, are wondering which animal models are available in your region or simply can't find what you're looking for, the Glossary of Terms and Stocks and Strains Worldwide appendix are here to help.

Glossary of Terms

Agent	Abbreviation	Family/Order	Subfam/Genus	Host Species*
Adenovirus	MAV, RAD	Adenoviridae	Mastadenovirus	M, R
Aleutian disease virus	ADV	Parvoviridae	Amdovirus	F
Cilia-associated respiratory bacillus	CARB	Unclassified	Unclassified	M, R, Rb
Clostridium piliforme	CPIL	Clostridaceae	Clostridium	M, R, Rb, F
Distemper virus	CDV	Paramyxoviridae	Morbillivirus	F
Ectromelia virus (Mousepox)	ECTRO	Poxviridae	Orthopoxvirus	M
Eimeria	EIM	Eimeriidae	Eimeria	M, Rb
Encephalitozoon cuniculi	ECUN	Pleistrophoridiae	Encephalitozoon	M, R, GP, H, Rb
Encephalomyocarditis virus	EMCV	Picornaviridae	Cardiovirus	M, R
Guinea pig adenovirus	GAV	Adenoviridae	Mastadenovirus	GP
Guinea pig cytomegalovirus	GpCMV	Herpesviridae	Betaherpesvirus	GP
Hantaan	HTNV (HANT)	Bunyaviridae	Hantavirus	M, R
Infectious pancreatic necrosis virus	IPNV	Birnaviridae	Aquabirnavirus	Z
Infectious spleen and kidney necrosis virus	ISKNV	Iridoviridae	Megalocytivirus	Z
Influenza A virus	INFA	Orthomyxoviridae	Influenzavirus A	F
Kilham rat virus	KRV	Parvoviridae	Protoparvovirus	R
Lactate dehydrogenase elevating virus	LDV/LDH	Arteriviridae	Arterivirus	M
Ljungan virus	LV	Picornaviridae	Parechovirus	R
Lymphocytic choriomeningitis virus	LCMV	Arenaviridae	Arenavirus	M, R, GP, H
Minute virus of mice	MVM	Parvoviridae	Protoparvovirus	M
Murine chapparvovirus	MuCPV, MKPV, RoChPV-1	Parvoviridae	Chapparvovirus	M
Mouse cytomegalovirus	MCMV	Herpesviridae	Betaherpesvirus	M
Mouse hepatitis virus	MHV	Coronaviridae	Betacoronavirus	M
Mouse parvovirus	MPV-1/-2/-5	Parvoviridae	Protoparvovirus	M
Mouse pneumonitis virus	K	Polyomaviridae	Polyomavirus	M
Mouse thymic virus	MTLV	Herpesviridae	Roseolovirus	M
Murine norovirus	MNV	Caliciviridae	Norovirus	M
Murine rotavirus	EDIM/ROTA-A	Reoviridae	Rotavirus	M
Mycoplasma arthritidis	MARTH	Mycoplasmataceae	Mycoplasma	M, R
Mycoplasma pulmonis	MPUL	Mycoplasmataceae	Mycoplasma	M, R

* Species: M = mouse, R = rat, GP = guinea pig, H = hamster, Rb = rabbit, F = ferret, Z = zebrafish

Glossary of Terms

Agent	Abbreviation	Family/Order	Subfam/Genus	Host Species*
Myxomatosis virus	MYXO	Poxviridae	Leporipoxirus	Rb
Parainfluenza virus (type 1)	PIV-1	Paramyxoviridae	Respirovirus	Rb
Parainfluenza virus (type 2)	PIV-2	Paramyxoviridae	Rubulavirus	Rb
Parainfluenza virus (type 3)	PIV-3	Paramyxoviridae	Respirovirus	GP
Parainfluenza virus (type 5)	PIV-5	Paramyxoviridae	Rubulavirus	GP, H
Pneumocystis carinii	PCAR	Pneumocystidaceae	Pneumocystis	R
Pneumonia virus of mice	PVM	Paramyxoviridae	Pneumovirus	M, R, GP, H
Polyoma virus	POLY	Polyomaviridae	Polyomavirus	M
Prospect Hill virus	PHV	Bunyaviridae	Hantavirus	M
Rabbit adenovirus	RbAV	Adenoviridae	Mastadenovirus	Rb
Rabbit adenovirus	RbAV	Adenoviridae	Mastadenovirus	Rb
Rabbit hemorrhagic disease virus	RHDV	Caliciviridae	Lagovirus	Rb
Rabbit picobirnavirus	RPBV	Picobirnaviridae	Picobirnavirus	Rb
Rabbit rotavirus	ROTA	Reoviridae	Rotavirus	Rb
Rat coronavirus/sialodacryoadentitis virus	RCV, SDAV	Coronaviridae	Betacoronavirus	R
Rat cytomegalovirus	RCMV	Herpesviridae	Betaherpesvirus	R
Rat minute virus	RMV	Parvoviridae	Protoparvovirus	R
Rat parvovirus	RPV	Parvoviridae	Protoparvovirus	R
Rat polyomavirus	RatPyV2/RPyV2	Polyomaviridae	Unclassified	R
Rat rotavirus (infectious diarrhea of infant rats)	IDIR/ROTA-B	Reoviridae	Rotavirus	R
Rat theilovirus (Theiler's-like virus of rats)	RTV	Picornaviridae	Theilovirus	R
Reovirus	REO	Reoviridae	Orthoreovirus	M, R, GP, H
Rodent Protoparvovirus NS-1	NS-1	Parvoviridae	Protoparvovirus	M, R
Sendai virus	SEND	Paramyxoviridae	Respirovirus	M, R, GP, H
Seoul virus	SEO	Bunyaviridae	Hantavirus	M, R
Theiler's murine encephalomyelitis virus	TMEV (GDVII)	Picornaviridae	Cardiovirus	M, R
Toolan's H-1 virus	H-1	Parvoviridae	Protoparvovirus	R
Toxoplasma gondii	TOXO	Sarcocystidae	Toxoplasma	Rb
Treponema paraluis-cuniculi	TREP	Spirochaetales	Treponema	Rb

** Species: M = mouse, R = rat, GP = guinea pig, H = hamster, Rb = rabbit, F = ferret, Z = zebrafish*

Glossary of Terms

Agent	Abbreviation	Family/Order	Subfam/Genus	Host Species
Epstein-Barr virus	EBV	Herpesviridae	Lymphocryptovirus	Simian
Hepatitis A	HEP-A	Picornaviridae	Hepatovirus	Simian
Herpes B virus	HBV	Herpesviridae	Alphaherpesvirus	Simian
Herpes virus papio-2	HVP-2	Herpesviridae	Alphaherpesvirus	Simian
Lymphocryptovirus	LCV	Herpesviridae	Lymphocryptovirus	Simian
Macaque (Rhesus) rhadinovirus	MRV	Herpesviridae	Rhadinovirus	Simian
Malaria (Plasmodium)	MAL	Plasmodiidae	Plasmodium	Simian
Measles virus	MV	Paramyxoviridae	Morbillivirus	Simian
Parainfluenza virus (type 5)	PIV-5 (SV-5)	Paramyxoviridae	Rubulavirus	Simian
Simian agent 8	SA-8	Herpesviridae	Simplexvirus	Simian
Simian cytomegalovirus	SCMV/CMV	Herpesviridae	Cytomegalovirus	Simian
Simian foamy virus	SFV	Retroviridae	Spumavirus	Simian
Simian immunodeficiency virus	SIV	Retroviridae	Lentivirus	Simian
Simian rotavirus	SA-11	Reoviridae	Rotavirus	Simian
Simian T-lymphotropic virus	STLV	Retroviridae	Deltaretrovirus	Simian
Simian type D retrovirus	SRV	Retroviridae	Betaretrovirus	Simian
Simian varicella virus	SVV	Herpesviridae	Varicellovirus	Simian
Simian virus 40	SV-40	Polyomaviridae	Polyomavirus	Simian
Trypanosoma cruzi Chagas Disease)	T. cruzi/CHA	Trypanosomatidae	Trypanosoma	Simian

General Terms and Conditions of Sale

Charles River Laboratories, Inc. and its affiliates ("Charles River") will provide the goods ("Products"), animals ("Models") and services ("Services") described in the Charles River acknowledgment, quotation, invoice, protocol, statement of work (collectively hereinafter, "SOW") and Charles River's customer ("Customer") will purchase the Products, Models and/or Services pursuant to the specifications contained in the SOW and in accordance with these Terms and Conditions. These Terms and Conditions will also apply to all future purchases of Products, Models and/or Services by Customer.

1. Binding Character

Customer's purchases of Products, Models and/or Services are (a) exclusively governed by these Terms and Conditions, including any mutually agreed special terms and conditions set forth separately and (b) constitutes Customer's express acceptance of these Terms and Conditions. This provision also applies if Charles River delivers Products or Models or provides Services despite being aware of conflicting or additional standard terms and conditions of Customer.

No other document attempting to negate or otherwise modify the terms hereof, including any purchase order or request for proposal or any deviating or supplementing standard terms and conditions of Customer, will be binding upon Charles River unless expressly agreed to Charles River in writing.

2. Provision of the Products and Conduct of the Services

Customer and Charles River will adhere to all applicable laws, rules and regulations ("Applicable Law").

If an amendment to the SOW requires additional or different work by Charles River, Charles River may agree to conduct such work and will be paid an amount mutually agreed to by the parties. Deviations from the SOW may be made in an emergency without Customer's approval, provided that Charles River use commercially reasonable efforts to obtain Customer's verbal approval, which will be subsequently confirmed in writing. The parties acknowledge that during the course of performing the Services in accordance with the SOW, additional costs may be incurred by Charles River as a result of procedural changes, which do not amount to, or require a change in, the SOW, but which are deemed necessary by Charles River to successfully perform the Services, and which could not be foreseen at the time of the preparation of the SOW. If such procedural change occurs, Charles River will advise Customer prior to implementation and solicit Customer's agreement as to the necessity and additional cost thereof. If Charles River is unable to contact Customer in advance, Customer agrees that in order to maintain the integrity of the Services, Charles River may proceed accordingly, and recover such additional costs from Customer upon presentation of an explanation of such procedural changes and the necessity thereof.

Charles River's offers are without obligation. Unless expressly confirmed by Charles River in writing, any indicated delivery dates or indicated lead times do not constitute fixed date transactions. Any deliveries are "ex works" (Incoterms 2010) at Charles River's premises unless expressly agreed otherwise with Customer in writing. Place of performance and delivery is at Charles River's premises. Title to the Products and/or Models will pass to Customer once the Products and/or Models leave Charles River's facility or are delivered to a common carrier, as applicable.

3. Restrictions on Use and Breeding

Customer will use Models and Products in accordance with all Applicable Laws. Customer agrees and will ensure that all Models purchased from Charles River will not be: (i) used for any purpose other than the internal research of Customer, (ii) bred (for sale or otherwise), unless Charles River provides Customer with prior written consent, (iii) provided to any agent or other third party for any reason, including, but not limited to, breeding or other services, unless Charles River provides Customer with prior written authorization, or (iv) modified in any way without the prior written authorization of Charles River, except for modifications for internal research purposes only. Models from Charles River include: (i) the purchased animals themselves, (ii) all descendants of those purchased animals derived by inbreeding or crossbreeding, including modified and unmodified derivatives of those animals or their descendants, or by any other reproductive technologies, and (iii) animals purchased from Charles River that have been modified in any way (genetically or otherwise) and their descendants. Customer will not, without the prior written consent of Charles River, return Products, Models or shipping containers to Charles River.

The purchase of any Products or their components, Models or Services conveys to Customer the non-transferable, non-sublicensable, non-exclusive right to internally use the Model, Product, and the components of the Product, only in research conducted by Customer and specifically in accordance with the SOW. Customer cannot sell, transfer, or make available to a third party the Products or their components, Models including if modified, or the Services for Commercial Purposes without prior written consent. "Commercial Purposes" means any activity for cash or other consideration not expressly permitted by Charles River including, but not limited to sale, resale, and/or distribution of the

Products and/or Models (including if modified), or their components or materials made using the Product or their components, except by licensed distributors of Charles River, whether or not resold for use in research. The foregoing limitations are required by Charles River given the nature and sensitivity of the Products, Models and Services provided by Charles River. To the extent that Charles River owns or controls (with the right to sublicense) patent rights or other intellectual property rights applicable to the Models or Products, those rights are licensed to Customer on a limited, revocable, non-exclusive,

non-transferable, and non-sublicensable basis only for the internal uses expressly permitted above. If Customer fails to comply with the foregoing limitations, in addition to any other remedies available to Charles River, the rights granted under this section will automatically terminate.

These Terms and Conditions are expressly made subject to any laws, regulations, orders, or other restrictions on the export or import of the Products, Models or Services or information about such Products, Models or Services which may be imposed from time to time by any applicable government or government entity, including, but not limited to. the United States of America. Customer will not export the Products, Models or information about the Products, Models or Services without the prior written consent of Charles River and compliance with such laws, regulations, orders, or other restrictions. Customer represents and warrants that (a) it is not located in a country that is subject to a U.S. Government or other internationally regulated embargo, or that has been designated by the U.S. Government or other international regulatory agency as a "terrorist supporting" country; and (b) Customer is not listed on any U.S. Government or other applicable international list of prohibited or restricted parties.

4. Compensation

Unless otherwise agreed to by the parties, prices will be as per the price list (if applicable, price of Models is based on highest weight range) on the day of delivery, and do not include taxes, packaging, insurance, or shipment expenses. Charles River may modify the price list from time to time. Customer will pay Charles River as set forth in the SOW for Services, Products and/or Models. All invoices are due and payable thirty (30) days from the date of the invoice without any deductions and Customer agrees to pay all invoices submitted. Customer will not withhold payment, assert a right of retention or set off any counterclaims unless Customer's counterclaims have been finally adjudicated by a competent court or have been acknowledged by Charles River in writing. All amounts not paid by Customer when due will accrue interest from the applicable due date until paid, at the highest rate permitted under Applicable Law. Charles River may also elect to cease or suspend the supply of Models or Products and any work on the Services, or withhold required reports or other deliverables if Customer does not make payments when due and payable.

All termination, delay, or cancellation fees are set forth in the applicable Research Models and Services catalog or the SOW.

If in the judgment of Charles River, the Customer's financial condition is precarious or there has been a materially adverse change in Customer's financial condition, Charles River will have the right to demand payment or other assurances which it deems adequate before providing any Products, Models or Services.

5. Test Articles

Customer will provide Charles River with sufficient amounts of compounds, materials, animals, substances, devices, and protocols meeting relevant specifications, including health and genetic data ("Test Articles") with which to perform the Services. Customer will provide Charles River with complete and accurate data to apprise Charles River of the identity, strength, purity, stability, composition or other characteristics, proper storage, and safe handling requirements of the Test Articles, including a Material Safety Data Sheet (MSDS) or equivalent documentation. Customer will certify to Charles River that the methods of synthesis, fabrication, or derivation of the Test Articles have been documented. All costs associated with shipping the Test Articles to Charles River will be the responsibility of Customer, and Charles River will not be responsible for any loss, damage, or destruction of the Test Articles while in transit. All Test Articles and materials used in connection with the Services will remain the property of Customer.

6. Reports

Charles River will keep complete and accurate records of the status and progress of the Services if agreed in the SOW or as required by Applicable Law. Charles River will furnish a report or data containing information as specified in the SOW. All reports will be prepared in the standard format of Charles River.

Neither Charles River nor Customer will publish any report or data prepared for Customer by Charles River without the prior written consent of the other party, which will not be unreasonably withheld.

If Charles River provides electronic access to the data, records, reports and other documentation and Customer elects to use such electronic access, the use of such electronic access will be governed by Charles River's standard access terms and conditions which are available on request.

7. Inspection

Upon reasonable advance written notice, at mutually agreeable and during regular business hours, Charles River will permit Customer to visit the Charles River facilities where the Services are performed to monitor Charles River's performance of the Services in compliance with Charles River's biosecurity measures, Charles River's business requirements and ensuring an uninterrupted course of business at Charles River's premises.

Charles River will notify Customer as soon as practical of any regulatory inspection of Charles River's facilities that directly impacts the Services provided to Customer.

8. Ownership

Any inventions, techniques, intellectual property, technology, commercial and/or industrial secrets, regardless of whether patented or registered, for providing the Models or Products
or performing the Services are, and will remain, Charles River's exclusive property including, but not limited to, present and future documentation, scientific and technical data, test procedures, and other information that is owned or licensed by Charles River and is not developed hereunder.

Charles River will have the right to use concurrent control data as part of its general historical database. Any data, discoveries, or inventions developed or generated, which directly relate to any information or materials provided by Customer will be the property of Customer. Charles River agrees to assist Customer in securing any patents, copyrights, or other proprietary rights in such data, discoveries or inventions, and to perform all reasonable acts that may be reasonably required to vest in Customer all right, title, and interest in such data, discoveries, or inventions, and Charles River will be compensated at its standard rates for such assistance. All costs and expenses associated with establishing Customer's rights therein will be Customer's responsibility.

9. Archiving

Provided that Customer is not in financial default under this Terms and Conditions or under any SOW, all reports and supporting documentation resulting from the Services are Customer's property ("Materials"). Charles River will retain the Materials for the period set forth in the SOW. At the end of such period, Charles River will contact Customer to determine whether to, all options at Customer's expense: (a) extend storage of the Materials, (b) return the Materials to Customer, or (c) dispose of the Materials. If Customer requests Charles River to continue to store the Materials and Charles River agrees,

Charles River will invoice Customer at Charles River's then current rates. If Customer fails to give such instructions, Charles River will notify Customer, and if instructions are not forthcoming within thirty (30) days of said notification, Charles River will have the option of continuing to store the Materials or

returning the Materials to Customer at Customer's expense. Customer will be liable for storage charges until the Materials are returned to Customer. While the Materials are in transit to Customer, all risk of loss or exposure to the Materials will be borne by Customer.

If the Materials require special storage conditions, additional charges will be assessed and invoiced to Customer. Invoices will be issued annually in advance and are due and payable upon receipt.

10. Warranties

Customer warrants that it owns all rights, title, and interest in the Test Articles and the intellectual property related thereto, and that Charles River's use of the Test Articles does not infringe any third party rights.

Subject to section 3, Charles River warrants that the Products, Models and Services will conform to the specifications contained or agreed in the applicable SOW and any Applicable Law at the time of delivery or performance. Charles River does not warrant or represent that the results of the Services will be acceptable to any regulatory or governmental agency nor that the results of the Services will enable Customer to further develop, market, or otherwise exploit the Test Articles or any other product or service.

THE WARRANTY BY CHARLES RIVER SET FORTH HEREIN IS IN LIEU OF ANY AND ALL OTHER REPRESENTATIONS OR WARRANTIES, EXPRESS, IMPLIED, OR STATUTORY INCLUDING, BUT NOT LIMITED TO, ANY IMPLIED WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, SUITABILITY OF THE PRODUCTS, MODELS AND SERVICES FOR CUSTOMER'S PURPOSES, IMPACT OF THE
PRODUCTS, MODELS AND SERVICES ON CUSTOMER'S OPERATIONS, OR NON-INFRINGEMENT OF A PATENT, TRADEMARK OR OTHER INTELLECTUAL PROPERTY RIGHT.

Any claim for breach of warranty must be made in writing to Charles River within ten (10) business days after the Products or Models are delivered or the completion of Services, or per Applicable Law, after which time the Products, Models or Services will be deemed finally accepted. Subject to the limitations set forth in Section 11, if Charles River commits a breach of the warranty

as set forth in this Section, Charles River's sole liability, and Customer's sole remedy, will be for Charles River to replace the Products or Models, or issue a credit therefore, or conform the work or portion of the Services affected by the breach to the relevant specification. Charles River will be entitled, at its sole election, to correct or replace the defective Product, Model or Service or to issue a credit. The delivery of a defective Product, Model or Service will not constitute a violation of a material contractual obligation by Charles River.

11. Limitation of Liability

Charles River will not be liable for penalties or liquidated damages or for special, indirect, consequential, punitive, exemplary, or incidental damages of any type or kind (including, without limitation, lost profits) regardless of whether any such losses or damages are characterized as arising from breach of contract, breach of warranty, tort, negligence, strict liability, or otherwise, even if Charles River is advised of the possibility of such losses or damages, or if such losses or damages are foreseeable.

Charles River's liability, regardless of the form of action, will be limited to actual and foreseeable damages and will not exceed the total price paid for the Products, Models or Services pursuant to which such liability arises. Charles River will not be liable for any damages arising from, or in connection with, any decision by Customer or any third party to further research, develop or market the Test Articles or any derivative or product or service related thereto, or the use made of the Products, Models, Services, or Test Articles or service related thereto.

In the case of a delay in delivery for which Charles River is responsible, Charles River's maximum liability is limited to an amount of 5% of the value of the delivery affected by the delay. The limitations period for any claims against Customer is twelve (12) months unless mandatory statutory provisions require a longer period of limitation.

12. Indemnities

Customer will defend, indemnify, save, and hold harmless Charles River, its parent, subsidiaries and affiliates and their respective directors, officers, employees, and agents from and against any claims, demands, suits, actions, causes of action, losses, damages, fines, and liabilities, including reasonable professional fees arising out of or in connection with (a) the research, development, manufacture, distribution, use, sales or other disposition by Customer, or any distributor, collaborator, representative or agent of Customer, of the Test Articles and/or any other substances upon which the Services were performed or any use made of the Products and/or Models, (b) any infringement of any third party's intellectual property rights or unauthorized use or misappropriation of its know-how or trade secrets, (c) Customer's gross negligence, willful misconduct, or breach of this agreement, or (d) personal injury related to contact with the Products or Models during visits to Charles River's facilities or after delivery of the Products or Models to Customer.

13. Insurance

Each party will have insurance sufficient to cover its interest or potential liabilities hereunder including, but not limited to, worker's compensation, if applicable, and comprehensive general liability.

14. Confidentiality

In the course of providing the Products or Models or performing the Services, Charles River and Customer may exchange proprietary and confidential information. The parties will identify, in writing, such information as confidential and/or proprietary.

If a party intends to disclose confidential information to the other party orally, the disclosing party will (i) alert the other party of the confidential nature of the disclosure prior to the disclosure and (ii) provide written notice to the other party of the confidential nature and contents of such disclosure within ten (10) days of the original disclosure. Each party will use its commercially reasonable efforts to maintain such information in confidence and will employ reasonable and appropriate procedures to prevent its unauthorized disclosure unless required by Applicable Law to disclose such information provided that, to the extent permitted by Applicable Law, the receiving party provides prompt written notice of such disclosure to the disclosing party and takes reasonable and lawful actions to avoid and/or minimize the extent of such disclosure or seek confidential handling of such information, all at the cost and expense of disclosing party. Neither party will use the other party's proprietary and/or confidential information other than in performance of this Agreement. These obligations of confidentiality will survive termination or expiration of the Terms and Conditions for a period of five (5) years.

These confidentiality provisions will not apply to any information, which (i) is known to the receiving party at the time it was obtained from the disclosing party, (ii) is acquired by receiving party from a third party, and such third party did not obtain such information under an obligation not to disclose, (iii) is or becomes published or otherwise in the public domain other than by violation

of these Terms and Conditions by the receiving party, (iv) is independently developed by the receiving party without reference to or reliance upon the information provided by the disclosing party, or (v) is required to be disclosed by the receiving party to comply with Applicable Laws or governmental regulations, provided that the receiving party provides prompt written notice of such disclosure to the disclosing party and cooperates with the disclosing party's reasonable and lawful actions to avoid and/or minimize the extent of such disclosure, at the disclosing party's expense.

During any remote monitoring, audit or inspection of Charles River, Customer agrees not to (a) take photographs or use any other method of recording information regarding the site; (b) access or attempt to access or view any of the work product or network systems that are being used by Charles River without the express permission and in the presence of the Charles River representative that is hosting the remote audit; or (c) remove any document, equipment or other materials from the remote study monitoring or audit without Charles River's prior written permission.

15. Termination

Unless otherwise specified in the SOW, Customer may terminate the SOW at any time without cause upon thirty (30) days prior written notice to Charles River. In the event of such termination, Charles River will be paid for all Products and/or Models provided or Services rendered through the effective date of termination, together with any additional expenses incurred to shut down the Services, any irrevocably committed costs and any cancellation or termination fee set forth in the current Research Models and Services catalog or the SOW.

Either party may terminate these Terms and Conditions or SOW, as applicable, at any time upon thirty (30) days prior written notice to the other party, for material breach of the Terms and Conditions by the other party if such breach is not remedied to the non-breaching party's reasonable satisfaction within the thirty (30) day notice period.

Upon termination, neither party will have any further obligations, except that (i) the liabilities accrued through the date of termination and (ii) the obligations which by their terms survive termination, including the applicable confidentiality, record keeping, regulatory compliance, intellectual property and indemnification provisions of these Terms and Conditions, will survive termination.

16. Force Majeure

Except with respect to the payment of any amount due hereunder, neither party will be in default of any obligation to the extent that the performance of such obligation is prevented or delayed by fire, flood, earthquake, hurricane, explosion, disease, contamination, pandemic/epidemic, strike, acts of terrorism, war, insurrection, embargo, government requirement, civil or military authority, animal activism, act of God, or any other event, occurrence or condition which is not caused, in whole or in part, by that party, and which is beyond the reasonable control of that party.

17. Governing Law and Dispute Resolution

These Terms and Conditions and any dispute arising from or in connection with the sale of the Products, Models and/or Services are governed by, and will be construed in accordance with, the laws of Delaware, excluding the United Nations Convention on the International Sale of Goods and without regard to any choice of law principle that would dictate the application of the law of another jurisdiction.

The parties will attempt to resolve through negotiations any controversy, claim, or dispute. If the negotiations are not successful, upon written demand of either party, the claim, controversy or dispute will be submitted to arbitration. Such arbitration will take place in Boston, Massachusetts, will be conducted in English, and will proceed in accordance with the rules of the American Arbitration Association in force from time to time. A record and transcript of the proceedings will be maintained. Any award will be made in writing. The determination of a majority of the panel of arbitrators will be the decision of the arbitrators, which will be binding regardless of whether one of the parties fails or refuses to participate in the arbitration. The arbitrators will decide on the recovery of the costs of the arbitration, except expert and attorneys' fees.

18. Miscellaneous

All notices from one party to the other will be in writing. Notices will be sent by internet transmission, overnight courier, or certified mail, return receipt requested. All notices will be effective upon receipt.

The business relationship of Charles River to Customer is that of an independent contractor and not of a partnership, joint venture, employer, agent, or any other kind of relationship.

These Terms and Conditions, and the rights and obligations hereunder, may not be assigned or transferred by either party without the prior written consent of the other party.

These Terms and Conditions, together with the SOW, set forth the entire agreement and understanding between the parties, superseding any and all previous statements, negotiations, documents, agreements and understandings, whether oral or written, as to the subject matter hereof.

In the event that any one or more of the provisions contained in these Terms and Conditions is held to be invalid, illegal or unenforceable in any respect, that invalidity, illegality or unenforceability will not affect any other term or condition, and all other terms and conditions will remain in full force and effect.

Any modification or waiver of these Terms and Conditions will require written form and Charles River approval. This written form requirement also applies to a waiver or modification of the written form requirement itself.

19. Intellectual Property

Charles River® and Charles River Laboratories® are registered trademarks of Charles River. VAF/Plus®, VAF/Elite®, BlastoKit®, CD®, CD-1®, CFW®, EAD®, Gnoto-safe®, PRIA®, SHO®, THE POUND MOUSE®, Multiplexed Fluorometric ImmunoAssay® (MFIA®), I•CRYO®, EZ-Spot®, Laboratory Testing Management® and MAX-BAX® are registered trademarks of, or are under license by, Charles River. CDF™, CF-1™, Sew Easy™, ICM™ and LTM™ are trademarks of, or are under license by, Charles River. The Source℠ is a service mark of Charles River. Nothing in these terms and conditions should be construed as granting, by implication, estoppel, waiver or otherwise, any license or right of use to any Charles River trademark. Client will not use these, or any other Charles River trademark, for any purpose, including in any publicity, promotion, news release or other public disclosure without the prior written permission of Charles River, except, in each case, as may be required by law.

20. Privacy

The Charles River privacy policy can be found at https://www.criver.com/about-us/privacy-policy.