With production facilities located worldwide, our extensive network provides continual research support, regardless of location. Through our core programs of Biosecurity, International Genetic Standardization (IGS), Animal Welfare and Model Quality, you receive animal models of a superior health and genetic status, ensuring that the integrity of your research results will be maintained over time. From standard and disease-specific models to surgically altered animals, you can rely on us to support your research programs, now and in the future.

Our Animal Models

Charles River is committed to providing you with high-quality genetically standardized models. However, selecting the appropriate animal model for your studies is critical to the success of your research. To assist you, we offer an evaluation program that allows you to assess the quality and compatibility of our animal models before making a commitment. For more information, please go to www.criver.com/rmeval.

VAF/Plus® and VAF/Elite®

As part of our continuing commitment to quality, we offer VAF/Plus® and VAF/Elite® animals, both of which are free of select infectious agents and parasites.

VAF/Plus® (Virus Antibody Free) Animals

VAF/Plus® animals are raised in highly controlled barrier production rooms or isolators and are frequently tested to ensure that they are free of the infectious agents listed in the table on page 3. They are also free of certain parasites (e.g., mites and pinworms) that have not been listed here, as well as certain viruses and bacteria that have well-established, disease-causing potential or are known to interfere with research results. VAF/Plus® animals are not free of all microorganisms, but instead have been associated with a broad spectrum of beneficial organisms common to the research environment. For more information on the health monitoring program for VAF/Plus® animals, please refer to the Health Reports section of our website at www.criver.com/info/rm.

The majority of VAF/Plus® animals are raised in open-top cages in barrier production rooms that employ comprehensive biosecurity processes to safeguard the introduction of adventitious agents into the colony. Animals originate from rederived and isolator-maintained colonies that undergo extensive health monitoring prior to establishing a new production colony. Each barrier room at a production site is separated from other barrier rooms. All supplies provided to barrier rooms are sterilized by autoclaving or gamma irradiation before entry into the room. Autoclave loads use standardized configurations for each type of material processed (e.g., food and bedding), and load temperatures are calibrated at multiple points throughout a load as well as validated to kill heat-resistant spores. Each room is served by separate HVAC systems that are equipped to supply HEPA-filtered air. Rooms have a dedicated staff of animal care technicians who are permanently assigned to, and only enter, a single barrier room. Under no circumstances are animals, supplies or equipment transferred directly from one barrier room to another. All cages and cage components are washed and sanitized within the barrier room. Waste bedding is removed pneumatically from the rooms. Personnel enter rooms through a series of air locks and are required to undergo a complete change of clothes when entering the room. A small number of lower demand VAF/Plus® stocks and strains may be maintained in isolators; isolator biosecurity practices are reviewed in the following section.

VAF/Elite® (Virus Antibody Free) Animals

VAF/Elite® animals are free of the agents listed in the VAF/Plus® profile, plus the additional opportunistic agents listed in the table on page 3. Most of these agents are carried by humans or are present in the environment and are non-pathogenic for immunocompetent rodents. For some immunodeficient or sensitive models, these agents might cause local or systemic infections.

VAF/Elite® animals, both immunocompetent and immunodeficient, are produced in flexible film and semi-rigid isolators, originally developed to provide the high-level biosecurity environment required for rodents lacking normal host-defense mechanisms. Maintenance of production isolators is performed following rigid biosecurity practices. All supplies used in isolators are in vacuum-sealed, gamma-irradiated packages that are immersed in a high-level disinfectant/sterilant (Clidox®). Animals originate from similarly housed isolator colonies that undergo extensive health monitoring prior to establishing a new production isolator. These practices are employed specifically to limit the exposure to opportunistic bacteria, including bacteria commonly found in or on humans, as some of these organisms could pose unwanted variables in certain research

studies. While maintained under a strict microbiologically controlled environment, the animals are not axenic (i.e., free of all known organisms). Moreover, while VAF/Elite® animals are initiated as defined flora (i.e., containing only a few well-defined organisms), our policy is to continue operating individual isolators if an occasional mold, yeast, fungus or common non-pathogenic environmental bacterium is detected. Microbiologic monitoring of VAF/Elite® production isolators is performed monthly, and more comprehensive microbiologic monitoring is performed quarterly. Full details on the health monitoring program for a VAF/Elite® colony, can be found on the Health Reports section of our website at www.criver.com/info/rm.

The VAF/Elite® health profile is currently offered for the following stocks and strains of mice:

- 129-Elite
- SJL-Elite
- C57BL/6-Elite
- SKH1-Elite
- CD1-Elite

Immunodeficient VAF/Elite® (Virus Antibody Free) Animals

Immunodeficient mice and rats are subject to disease from opportunistic agents that would not threaten animals with an intact immune system.

As many of these organisms are either common in the environment or can be found in humans, we breed and maintain all immunodeficient animals in strict bioexclusion housing and screen them for additional bacteria and fungi, including *Corynebacterium bovis* and all *Pneumocystis* spp. All Charles River immunodeficient mice and rats are free of these agents, as well as all agents on the VAF/Elite® Profile.

VAF Health Profiles

The table below lists the opportunistic agents tested for and excluded from our VAF/Plus® and VAF/Elite® animal colonies. For further information regarding viral profiles, microbiological flora or the comprehensive list of agents screened for as part of Charles River's health surveillance program, please go to the Health Reports section of our website at www.criver.com/info/rm or contact us at 1.877.274.8371 or askcharlesriver@crl.com.

Health Profile	Species	Agents Excluded
VAF/Plus®	Rat	SEND, PVM, SDAV, KRV, H-1, RPV, RMV, REO, RTV, LCMV, HANT, MAV, ECUN, CARB
		M. pulmonis, Salmonella spp., *S. moniliformis, C. kutscheri, H. hepaticus*
	Mouse	SEND, PVM, MHV, MVM, MPV, TMEV (GDVII), REO, EDIM, MAV, POLY, K, MCMV, MTLV, LCMV, HANT, ECTRO, ECUN, CARB, LDV, MNV
		M. pulmonis, Salmonella spp., *S. moniliformis, C. kutscheri, H. hepaticus, C. rodentium*
	Guinea Pig	SEND, PVM, LCMV, REO, GAV
		M. pulmonis, Salmonella spp., *S. moniliformis, S. zooepidemicus, B. bronchiseptica, H. hepaticus*
	Hamster	SEND, PVM, LCMV, REO, ECUN
		M. pulmonis, Salmonella spp., *H. hepaticus*
VAF/Elite®	Mouse	SEND, PVM, MHV, MVM, MPV, TMEV (GDVII), REO, EDIM, MAV, POLY, K, MCMV, MTLV, LCMV, HANT, ECTRO, ECUN, CARB, LDV, MNV
		M. pulmonis, Salmonella spp., *S. moniliformis, C. kutscheri, H. hepaticus, C. rodentium,* Beta hemolytic *Streptococcus* spp., *Klebsiella oxytoca, Klebsiella pneumoniae, Pasteurella pneumotropica, Pneumocystis* spp., *Pseudomonas aeruginosa, Proteus mirabilis, Staphylococcus aureus*

See glossary of terms on page 68 for abbreviation key for agents

Glossary of Terms

Agent	Abbreviation	Family/Order	Subfam/Genus	Host Species*
Aleutian disease virus	ADV	Parvoviridae	Amdovirus	F
Chicken anemia virus	CAV	Circoviridae	Gyrovirus	C
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
Encephalitozoon cuniculi	ECUN	Pleistrophoridiae	Encephalitozoon	M, R, GP, H, Rb
Encephalomyocarditis virus	EMCV	Picornaviridae	Cardiovirus	M, R
Epizootic catarrhal enteritis	ECE	Coronaviridae	Unclassified	F
Guinea pig adenovirus	GAV	Adenoviridae	Mastadenovirus	GP
Guinea pig cytomegalovirus	GpCMV	Herpesviridae	Betaherpesvirus	GP
Hantaan	HANT	Bunyaviridae	Hantavirus	M, R
Influenza A virus	INFA	Orthomyxoviridae	Influenzavirus A	F
Kilham rat virus	KRV	Parvoviridae	Parvovirus	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	Parvovirus	M
Mouse adenovirus	MAV	Adenoviridae	Mastadenovirus	M, R
Mouse cytomegalovirus	MCMV	Herpesviridae	Betaherpesvirus	M
Mouse hepatitis virus	MHV	Coronaviridae	Coronavirus	M
Mouse parvovirus	MPV-1/-2/-3/-4/-5	Parvoviridae	Parvovirus	M
Mouse pneumonitis virus	K	Papovaviridae	Polyomavirus	M
Mouse rotavirus (Epizootic diarrhea of infant mice virus)	MRV / EDIM / ROTA-A	Reoviridae	Rotavirus	M
Mouse thymic virus	MTLV	Herpesviridae	Unclassified	M
Murine norovirus	MNV	Caliciviridae	Norovirus	M
Mycoplasma arthritidis	MARTH	Mycoplasmataceae	Mycoplasma	M, R
Mycoplasma pulmonis	MPUL	Mycoplasmataceae	Mycoplasma	M, R
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
Parvovirus NS-1	NS-1	Parvoviridae	Parvovirus	M, R
Pneumocystis carinii	PCAR	Pneumocystidaceae	Pneumocystis	R
Pneumonia virus of mice	PVM	Paramyxoviridae	Pneumovirus	M, R, GP, H
Polyoma virus	POLY	Papovaviridae	Polyomavirus	M
Prospect Hill virus	PHV	Bunyaviridae	Hantavirus	M
Rabbit adenovirus	RbAV	Adenoviridae	Mastadenovirus	Rb
Rabbit rotavirus	ROTA	Reoviridae	Rotavirus	Rb
Rat coronavirus/sialodacryoadentitis virus	RCV, SDAV	Coronaviridae	Coronavirus	R
Rat cytomegalovirus	RCMV	Herpesviridae	Betaherpesvirus	R
Rat minute virus	RMV	Parvoviridae	Parvovirus	R
Rat parvovirus	RPV	Parvoviridae	Parvovirus	R
Rat respiratory virus	RRV	See "*Pneumocystis carinii*"		R
Rat rotavirus (infectious diarrhea of infant rats)	ROTA-B / IDIR	Reoviridae	Rotavirus	R
Rat theilovirus (Theiler's-like virus of rats)	RTV	Picornaviridae	Theilovirus	R
Reovirus	REO	Reoviridae	Orthoreovirus	M, R, GP, H
Rabbit picobirnavirus	RPBV	Picobirnaviridae	Picobirnavirus	Rb
Sendai virus	SEND	Paramyxoviridae	Respirovirus	M, R, GP, H
Seoul virus	SEO	Bunyaviridae	Hantavirus	M, R
Simian virus 5	SV-5	Paramyxoviridae	Rubulavirus	GP, H
Theiler's murine encephalomyelitis virus	TMEV (GDVII)	Picornaviridae	Cardiovirus	M, R
Toolan's H-1 virus	H-1	Parvoviridae	Parvovirus	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, C = chicken, F = ferret*