

Rodent and Rabbit Health Monitoring Procedures

Europe

Dear Customer,

Envigo RMS continues to advance its health testing procedures based on the latest information on microbial pathogenicity and testing technology. We are committed to providing the highest quality animals to the research community and our health testing program provides you with assurance of that commitment.

Microbiologically defined rodent commercial colonies are maintained within maximum security production barriers and flexible-film isolators. Colonies are monitored daily for clinical signs of disease, injury, or abnormal behavior by trained and highly skilled personnel who are supported by the veterinary medical staff. Testing profiles and frequencies are selected to effectively monitor the colonies for pathogenic and select opportunistic flora. Routinely tested and reported organisms are listed below; additional information is available upon request.

The Directors of Laboratory Animal Medicine – Europe

Reporting and Customer Notification of Health Status Changes:

Health reports list the most recent test results as well as 18-month historical results and are updated monthly for production barriers and bi-monthly for production isolators. Routine findings are reported on our website. Customers are notified of changes in health status, once the results are confirmed, by phone or email.

Diagnostic Laboratory:

Envigo RMS primarily utilizes its own diagnostic laboratories, for routine health monitoring. Additional commercial diagnostic laboratories are used as necessary.

Necropsy procedures:

Include a physical examination, gross examination of tissues, organs, and systems. Abnormal fluids are examined by culture, and organs or tissues with lesions are examined histologically.

Table 1. General overview health monitoring EU rodent and rabbit production facilities.

COLONY	ANIMALS TESTED	NUMBER ANIMALS TESTED
Rodents and Rabbit Barriers ¹	Colony animals	Minimum 10 animals/species/barrier
Rodent Isolator ²	Colony + Sentinals ³	Minimum 2 immunocompetent & 2 immunodeficient/isolator

¹ Monthly test frequency

² Bi-monthly test frequency

³ Immunodeficient strains are not tested serologically; instead immunocompetent heterozygotes or isolator reared sentinals are used.

Serologic evaluations:

Are performed on immunocompetent animals using Bead, ELISA, IFA, HAI and secondarily IFA.

Microbiology procedures:

Aerobic, micro aerobic, and carbon dioxide cultures of nasopharynx and aerobic cultures of cecum are performed. qPCR methods are used to test for the presence of some bacteria.

Molecular Biology procedures:

qPCR methods are used to identify bacteria and viruses starting from different samples.

Parasitological evaluations:

Are performed by direct microscopic examination. The ears are evaluated for mites and lice. Small intestinal and cecal contents are evaluated for pathogenic and nonpathogenic helminths and protozoa. *Encephalitozoon cuniculi* is screened by serology.

Organism List and Testing Frequency

The Health Monitoring program has been designed as a combination of live animals and validated NSP (Non Sacrificial Profiles) methods including: Dried Blood Spot, Faecal samples, Oral swabs, Nasal swabs and fur. Each sample and method has been adapted to the different species in order to achieve a comprehensive plan by monthly/bi-monthly testing. Every month testing will comprehend either live animals, NSP methods or faecal sampling. Refer to the Health monitoring report for further information.

Legend: A = annually, Semi = semi-annually, Q = quarterly, M = monthly, B = bi-monthly, T = tri-annually, - = not tested., IFA = Indirect Fluorescent Antibody Testing, RT-PCR = Real Time Polymerase Chain Reaction; ELISA = Enzyme-Linked Immuno Sorbent Assay; Bead = Microbead Assay.

VIRUSES	MICE		RATS		GUINEA PIG	RABBIT	TEST METHODS
	BARRIER	ISOLATOR	BARRIER	ISOLATOR	BARRIER	BARRIER	
Kilham Rat Virus	-	-	M	B	-	-	Bead/ELISA/RT-PCR
Mouse Hepatitis Virus	M	B/T ^a	-	-	-	-	Bead/RT-PCR
Mouse Minute Virus	M	B/T ^a	-	-	-	-	Bead/RT-PCR
Mouse Parvovirus	M	B/T ^a	-	-	-	-	Bead/RT-PCR
Pneumonia Virus of Mice	M	B/T ^a	M	B	-	-	Bead/ELISA/RT-PCR
Mouse Rotavirus (EDIM)	M	B/T ^a	-	-	-	-	Bead/RT-PCR
Rat Minute Virus	-	-	M	B	-	-	Bead/ELISA/RT-PCR
Rat Parvovirus	-	-	M	B	-	-	Bead/ELISA/RT-PCR
Rat Theilo Virus	-	-	M	Semi	-	-	Bead/ELISA/RT-PCR
Reovirus type 3 (Reo 3)	M	Semi	M	Semi	-	-	Bead/ELISA/RT-PCR
Sialodacryoadenitis Virus	-	-	M	B	-	-	Bead/ELISA/RT-PCR
Sendai virus	M	B/T ^a	M	B	M	-	Bead/ELISA/RT-PCR
Theiler's Mouse Encephalomyelitis Virus	M	B/T ^a	-	-	-	-	Bead/ELISA/RT-PCR
Toolan's H-1	-	-	M	B	-	-	Bead/ELISA/RT-PCR
Mouse Norovirus	M	Semi	-	-	-	-	Bead/RT-PCR
Ectromelia virus	M	Semi	-	-	-	-	Bead/ELISA/RT-PCR
Hanta virus	A	A	Q	Semi	-	-	Bead/ELISA/RT-PCR
Lymphocytic Choriomeningitis Virus	M	Semi	M	Semi	Q	-	Bead/ELISA/RT-PCR
Mouse Adenovirus-1 (MAD-1)	M	Semi	M	Semi	-	-	Bead/ELISA/RT-PCR
Mouse Adenovirus-2 (MAD-2)	M	Semi	M	Semi	-	-	Bead/ELISA/RT-PCR
Mouse Cytomegalovirus	M	Semi	-	-	-	-	Bead/RT-PCR
Mouse Polyoma Virus	A	A	-	-	-	-	Bead/ELISA/RT-PCR
Mouse K Virus	A	A	-	-	-	-	Bead/ELISA/RT-PCR
Lactic Dehydrogenase-Elevating Virus	A	A	-	-	-	-	Bead/ELISA/RT-PCR
Mouse Thymic Virus	A	A	-	-	-	-	IFA/ RT-PCR
Guinea Pig Adenovirus	-	-	-	-	M	-	ELISA
Rabbit haemorrhagic disease virus	-	-	-	-	-	M	ELISA
Rabbit pox virus (myxomatosis)	-	-	-	-	-	M	ELISA
Rabbit rotavirus	-	-	-	-	-	M	ELISA

^a Immunocompetent animals

BACTERIA AND FUNGI	MICE		RATS		GUINEA PIG	RABBIT	TEST METHODS
	BARRIER	ISOLATOR	BARRIER	ISOLATOR	BARRIER	BARRIER	
<i>Bordetella bronchiseptica</i>	-	-	M	B	M	M	Culture/RT-PCR
CAR bacillus	A	A	M	Semi	-	-	Bead/ELISA/RT-PCR
<i>Chlamydia psittaci</i>	-	-	-	-	M	-	IFA
<i>Citrobacter rodentium</i>	M	B	-	-	-	-	Culture/RT-PCR
<i>Clostridium piliforme</i>	M	B/T ^a	M	B	Q	M	Bead/ELISA/RT-PCR
Hyperkeratinosis Associated <i>Corynebacterium</i> spp.	-	B	-	B ^a	-	-	RT-PCR
<i>Corynebacterium kutscheri</i>	M	B	M	B	M	-	Culture/RT-PCR
Dermatophytes	-	-	-	-	M	M	Culture
<i>Helicobacter</i> spp.*	M	B/Semi ^a	M	Semi	-	-	RT-PCR
<i>Klebsiella oxytoca</i>	-	B	-	B	-	-	Culture/RT-PCR
<i>Klebsiella pneumoniae</i>	-	B	-	B	-	-	Culture/RT-PCR
<i>Mycoplasma pulmonis</i>	M	B/T ^a	M	B	-	-	Bead/ELISA
<i>Pasteurella</i> spp.	M	B	M	B	M	M	Culture/RT-PCR
<i>Pneumocystis</i> spp.	A	B	M	B	-	-	RT/PCR
<i>Proteus mirabilis</i>	-	B	-	B	-	-	Culture/RT-PCR
<i>Pseudomonas aeruginosa</i>	-	B	-	B	-	-	Culture/RT-PCR
<i>Salmonella</i> spp.	M	B	M	B	M	M	Culture/RT-PCR
<i>Staphylococcus aureus</i>	-	B	-	B	-	-	Culture/RT-PCR
<i>Streptococci</i> Beta-haemolytic (group A and/or G)	M	B	M	B	M	-	Culture/RT-PCR
<i>Streptobacillus moniliformis</i>	M	B	M	B	M	-	Culture/RT-PCR
<i>Streptococcus pneumoniae</i>	M	B	M	B	M	-	Culture/RT-PCR
<i>Treponema (paraluis) cuniculi</i>	-	-	-	-	-	M	HAI
<i>Yersinia pseudotuberculosis</i>	-	-	-	-	M	-	Culture

PARASITES	MICE		RATS		GUINEA PIG	RABBIT	TEST METHODS
	BARRIER	ISOLATOR	BARRIER	ISOLATOR	BARRIER	BARRIER	
<i>Encephalitozoon cuniculi</i>	A	A	-	A	M	M	ELISA
Endoparasites	M	B	M	B	M	M	Direct microscopy /RT-PCR
<i>Aspiculuris tetraptera</i>	M	B	-	-	-	-	
<i>Balantidium</i> sp.	-	-	-	-	M	-	
<i>Chilomastix</i> sp.	M	B	M	B	M	M	
<i>Cryptosporidium</i>	M	B	M	B	M	M	
<i>Eimeria</i> sp.	M	B	M	B	M	M	
<i>Entamoeba</i> sp.	M	B	M	B	M	M	
<i>Giardia</i> spp.	M	B	M	B	M	M	
<i>Hymenolepis nana</i>	M	B	M	B	-	-	
<i>Spiroplasma</i> sp.	M	B	M	B	-	-	
<i>Syphacia</i> sp.	M	B	M	B	-	-	
<i>Tritrichomonas</i> sp.	M	B	M	B	M	M	
Ectoparasites	M	B	M	B	M	M	
<i>Gliricola porcelli</i>	-	-	-	-	M	-	
<i>Myocoptes musculinus</i>	M	B	M	B	M	M	
<i>Myobia musculi</i>	M	B	M	B	M	M	
<i>Radfordia ensifera</i>	M	B	M	B	-	-	

^a Immunocompetent animals

* *Helicobacter* spp: when found positive it includes the differentiation into the following species:
Helicobacter bilis, *Helicobacter Hepaticus*, *Helicobacter rodentium* and *Helicobacter typhlonius*.

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