inotiv

analyze. answer. advance.

JANUARY 1ST, 2024

Product Guide

Research Models and Services

BENELUX, SCANDINAVIA AND EASTERN EUROPE

Enhancing discovery

Inotiv's Comprehensive Solutions Empower Your Innovation from Discovery through Development

We offer a comprehensive suite of advanced nonclinical and analytical services and, with the acquisition of Envigo in 2021, a wide and innovative range of research models to accelerate client discovery. Every research model is designed to enhance a life, with a profound focus on animal welfare. Delivering an exceptional experience to our clients is at the center of everything we do.

At Inotiv, we're committed to supporting your discovery and development objectives to help you realize the full potential of your critical R&D projects to bring life-changing therapies to people around the world.

Discover your own enhanced outcomes at **inotivco.com** today.

TO ORDER: refer to page 99

Contents

Introduction 2

Discovery through approval 4

Quality programs 5

Microbiological and genetic monitoring 6

Worldwide stocks and strains 7

Worldwide research model services 12

Laboratory mice 13

Inbred mice 13
Aged mice 20
Outbred mice 21
Mutant mice 22
  Nudes 25
  SCIDs 27
  Other 28
  Diabetic 29
GEMS mice 30
  R2G2® 30
  B-NDG 31
Hybrid mice 34
COVID mice 36
  hACE2 36
  hTmprss2 37
  hACE2/hTmprss2 38

Laboratory rats 39

Inbred rats 39
Outbred rats 43
Mutant rats 47
  Nudes 47
GEMS rats 49
  Pink1 49
  Mdr1a 50
  Mdr1a-Bcrp 51
COVID rats 52
  hACE2 52
Pre-developed transgenic rat models 53
Aged rats 54

Additional models 55

Hamsters 55
Cotton rats 55
Guinea pigs 56
Rabbits 57
Nonhuman Primates 58

Packing guidelines 59

Teklad Diets, Bedding & Enrichment 60

Teklad Global Diets® 60
Custom research diets 68
Medicated diets 68
Bedding and enrichment 68

Services 66

Tumor models and services (PDX) 24
Custom genetically engineered rodent models 70
Contract breeding services 71
Full spectrum health monitoring 76
Contract research services 86
Genetic testing services 87
Biospecimen products and services 88
Import and export transport services 89
Surgical services 90
Antibody services 95

Inotiv 99

Ordering information 99

Therapeutic research models

Oncology

Mouse models - spontaneous mutant
  Athymic Nude 25
  NOD.SCID 26
  SCID 27
  SCID Beige 27
GEMS mice
  R2G2™ 28
  B-NDG 31
  B-NDG B2m 32
  B-NDG hIL15 33
Mouse models - general purpose
  C57BL/6 16
  C57BL/Ka 20
Rat model - mutant
  Athymic Nude 47
Rat models - general purpose
  F344 40

Toxicology

Mouse model
  ICR (CD-1®) 21
Rat models
  Sprague Dawley® 45
  Wistar Han® 43
Other models
  Rabbits 57
  Nonhuman Primates 58

Metabolics/Cardiovascular/Renal

Mouse models
  C57BL/6 16
  Diabetic 29
Rat models
  Spontaneous Hypertensive 41
  Long Evans 47
  Sprague Dawley® 45
  Zucker 48

TO ORDER: refer to page 99

Discovery through approval

At Inotiv, we deliver a comprehensive portfolio of drug discovery services and an integrated range of safety assessment, analytical support, DMPK, and consulting solutions essential to your success.

We have a multidisciplinary scientific staff with the expertise and technological capabilities to support you throughout the drug development life cycle. From lead selection and optimization to IND programs and beyond, our team takes a true collaborative approach working in partnership with you to find the right path that focuses on your objectives.

	Discovery		Preclinical Development	Clinical Development		
	Lead Selection	Optimization		I	II	III
Computational Tox/ Toxicogenomics	*In Silico* Chemical Structure Evaluation/QSAR, PBPK Modeling, Gene Expression Profiling		IVIVE Modeling, Gene Expression Profiling			
Pharmacology	*In Vivo* Efficacy Models, Rodent Telemetry		Targeted Proteomics, Disease Biomarkers, PK/PD Modeling			
Drug Metabolism	Metabolic Stability, Metabolic Soft-Spots, Discovery PK Screening, Cell & Molecular Biology		*In Vitro* DDI (CYP & Transporters), Metabolite ID, PK/TK Analysis	DDI, Circulating Human Metabolites (MIST), PK Modeling		
Safety Pharmacology	Exploratory Screening Using Large & Small Animal CNS, CV, Respiratory		Large Animal CV, Large & Small Animal Respiratory, Small Animal CNS			
General Tox	*In Vitro* Tox, Exploratory Toxicology (MTD/DRF)		IND Enabling Rodent/Non-Rodent	Sub Chronic & Chronic Tox		Carcino-genicity (Including Transgenic Mouse)
Genetic Tox	Screening, Mini Ames & *In Vitro* Micronucleus		Ames, *In Vitro* Cytogenetics, *In Vivo* MN/Comet			
Bioanalysis	Exposure Analysis, Dose Formulation Analysis, Discovery Biotherapeutics & Biomarkers		Regulated Preclinical, Immunogenicity, Biomarkers	Regulated Bioanalysis, Biomarkers		
Histology/Pathology	Target Tissue Assessment, Immunohistochemistry, Digital Imaging, Clinical Pathology		Histology & Pathology, Clinical Pathology			
DART				Fertility & Early Embryonic Development		
				Embryo-Fetal Development		Pre & Postnatal Development
Research Models and Services	General Purpose Models, GEMS Models, Model Support Services					
Teklad Diets	Standard Diets, Custom Diets, Bedding and Enrichment					

TO ORDER: refer to page 99

Quality programs

Inotiv is unique among suppliers of research models and services in the breadth of our programs for providing quality products and services to reduce variables to help you do research better.

ISO 9001:2015 / AAALAC

Diet manufacturing facilities in North America and animal production facilities in Europe and Israel are ISO 9001 certified. North American animal production facilities follow standard operating procedures aligned with the ISO 9001 standard, but are not ISO certified, and are fully accredited to AAALAC International. Inotiv in Europe has been granted full AAALAC accreditation for its (contract) breeding facilities in Horst, the Netherlands and its laboratory services facility in Desio, Italy.

Please visit **inotivco.com** to view a list of all certifications and accreditations for all Inotiv diet manufacturing and animal production sites globally.

Animal welfare inotivco.com/animalwelfare

Inotiv is dedicated to the humane care and use of research animals. The IACUC and dedicated veterinary staff manage policies and procedures to ensure that all animal use is performed in accordance with the highest standards.

These include AAALAC International accreditation for the US sites, Assurance of compliance with PHS/OLAW policy, and USDA Animal Care registration.

All animal production sites in the US are covered by a PHS Assurance and we are fully USDA registered. In Europe all sites comply with EU directive 2010/63 and ETS guidelines and if applicable additional national legislation.

Globally all Inotiv sites maintain compliance with national animal welfare legislation and are under supervision by an Animal Welfare Officer.

Diet and bedding monitoring inotivco.com/teklad

Teklad standard laboratory animal diets meet the highest nutritional and hygiene standards. All diets are manufactured under ISO 9001:2015 procedures with careful ingredient sourcing and monitoring.

Many diets are offered certified for contaminant analysis. High-quality bedding and bedding enrichment products are manufactured following appropriate quality standards, screened periodically for contaminants and can be certified on request.

Health monitoring inotivco.com/healthreports

We are committed to providing the highest quality animals to the research community and our health testing program provides you assurance of that commitment.

If any significant changes occur in colony genetic, health or microbiologic status, customers are notified immediately upon confirmation. Animal colonies will be restarted to eliminate significant pathogens or genetic contamination.

Microbiologically-defined rodent and rabbit colonies are maintained within production barriers and flexible-film isolators. Colonies are monitored, by trained personnel supported by our veterinary medical staff, daily for clinical signs of disease or abnormalities.

Our health surveillance programme is based on the FELASA recommendations 2014. Monitoring is carried out at our laboratories in UK and Italy, as well as by outside laboratories.

Genetic monitoring inotivco.com/GIAP

The genetic integrity of all stocks and strains are maintained through our Genetic Integrity Assurance Program (GIAP) to prevent mismating, regular monitoring of animal phenotype, quarterly testing of inbred strains using Single Nucleotide Polymorphisms (SNPs), and genetic monitoring of mutant strains. For genetic testing, Inotiv has partnered with Sampled (formerly Infinity BiologiX and Bionomics Research Technology at Rutgers University).

For any questions or reports, please contact our Technical Services group:
VSRSEU@inotivco.com

TO ORDER: refer to page 99

Microbiological testing and genetic monitoring

MICROBIOLOGICAL MONITORING

The Inotiv comprehensive monitoring programme includes monthly evaluations of barrier-produced rodents and monthly to quarterly evaluations of flexible-film isolator produced rodents. Visit our website to view details of our global health monitoring procedures.

Updated health reports are available at inotivco.com/healthreports

MICROBIOLOGICAL EVALUATION

Mouse serology

- Cilia Associated Respiratory Bacillus (CARB)
- *Clostridium piliforme*
- Ectromelia
- *Encephalitozoon cuniculi*
- Hantaan virus
- K Virus
- Lactic Dehydrogenase-Elevating Virus (LDEV)
- Lymphocytic Choriomeningitis (LCM)
- Minute Virus of Mice (MVM)
- Mouse Adenovirus 1+2
- Mouse Cytomegalovirus (MCMV)
- Mouse Hepatitis Virus (MHV)
- Mouse Norovirus (MNV)
- Mouse Parvovirus (MPV)
- Mouse Rotavirus (EDIM)
- Mouse Thymic Virus (MTV)
- *Mycoplasma pulmonis*
- Pneumonia Virus of Mice (PVM)
- Polyoma
- Reovirus 3 (Reo-3)
- Sendai
- Theiler's Mouse Encephalomyelitis (TMEV)

Rat serology

- Cilia Associated Respiratory Bacillus (CARB)
- *Clostridium piliforme*
- *Encephalitozoon cuniculi*
- Hantaan virus
- Kilham Rat Virus (KRV)
- Lymphocytic Choriomeningitis (LCM)
- Mouse Adenovirus 1+2
- *Mycoplasma pulmonis*
- Pneumonia Virus of Mice (PVM)
- Rat Coronavirus (SDA/RCV)
- Rat Minute Virus (RMV)
- Rat Parvovirus (RPV)
- Rat Theilovirus
- Reovirus 3 (Reo-3)
- Sendai
- Toolan's H-1 (H-1)

Guinea pig serology

- *Chlamydia psittaci*
- *Clostridium piliforme*
- *Encephalitozoon cuniculi*
- Guinea pig Adenovirus (GpAd)
- Guinea pig Cytomegalovirus(GPCMV)
- Lymphocytic Choriomeningitis (LCM)
- Parainfluenza virus 3
- Sendai

Hamster serology

- *Clostridium piliforme*
- *Encephalitozoon cuniculi*
- Lymphocytic choriomeningitis (LCM)
- *Mycoplasma pulmonis*
- Pneumonia Virus of Mice (PVM)
- Reovirus 3 (Reo-3)
- Simian Virus 5 (SV-5)
- Sendai

Rabbit serology

- *Clostridium piliforme*
- *Encephalitozoon cuniculi*
- Rabbit pox virus (Myxomatosis)
- Rabbit Haemorrhagic Disease Virus (RHDV)
- Rabbit Rotavirus
- *Treponema cuniculi*

PCR

- *Corynebacterium bovis*
- *Helicobacter* spp
- *Pneumocystis* spp (only immunodeficient animals and rats, due to causative agent for RRV)

Microscopic evaluations

- Ectoparasites
- Endoparasites
- Enteric protozoan
- Pathological lesions

Bacteriology

Cultures from the nasopharynx or caecum are routinely cultured for the presence of the following microorganisms:

- *Bordetella bronchiseptica*
- *Citrobacter rodentium*
- *Corynebacterium kutscheri*
- Dermatophytes
- Klebsiella oxytoca
- *Klebsiella pneumonia*
- *Pasteurella multocida*
- *Pasteurella pneumotropica*
- *Proteus* spp (isolator-produced rodents only)
- *Pseudomonas aeruginosa*
- *Salmonella* spp
- *Staphylococcus aureus*
- *Streptobacillus moniliformis*
- *Streptococcus pneumoniae*
- *Streptococci Beta-haemolytic* (group A and/or D)
- *Yersinia Pseudotuberculosis*

Organisms that are cultured using the media and methods used to culture the organisms above are identified to genus level. These data are available on request.

The lists of bacteria included in routine health monitoring reports vary according to species and immune status of the animals, and are based on the FELASA (2014) health monitoring recommendations. Not all the bacteria listed above are included in all routine reports. Complete lists of cultured bacteria (isolates) are available on request.

Current microbiological monitoring reports and cumulative summaries are provided upon delivery of our animals or can be reviewed on our website. Reports are also available on request for each animal shipment. Significant changes in health status are promptly reported to clients by phone, fax or email.

GENETIC MONITORING

Inotiv's global routine genetic monitoring program consists of collecting tissue samples semi-annually in the North America and Israel, and quarterly in Europe, from all new pedigreed Foundation Colony breeding cages in non-isolator-bred colonies. Tests are conducted on all pedigreed Foundation Colony breeding cages in newly-populated isolated-bred colonies, and then five (5) new Foundation Colony breeder cages annually thereafter. Routine genetic monitoring is also performed on several outbred stocks to determine heterogeneity and compare colonies across locations globally. In addition, various mutant models on either outbred or inbred backgrounds are tested annually to confirm the mutation of interest.

Tissue samples are sent to SAMPLED (formerly Infinity BiologiX and Bionomics Research Technology at Rutgers University) which has partnered with Inotiv. Our laboratory employs a customized panel of single nucleotide polymorphisms (SNPs) to evaluate strain differences in both rats and mice. Our routine rat and mouse SNP panels consist of 48 markers.

Custom made testing profiles are offered for your in house health surveillance programs. These include serology, bacteriology, molecular biology (PCR) and parasitology. Inotiv also offers supply of sentinels and pick up services. **See page 76-80 for additional information.**

Worldwide production locations

COMMON NAME	NOMENCLATURE	CODE	US	UK	NED	PG#
INBRED MICE						
129	129S2/SvHsd	215		+		13
A	A/JOlaHsd	049	+		+	13
BALB/c	BALB/cAnNHsd	047	+			20
	BALB/cOlaHsd	162		+	+	14
	BALB/cAnNHsd	113	+	+		14
C3H	C3H/HeNHsd	040	+		+	15
C57BL/6	C57BL/6JOlaHsd	057		+	+	16
	C57BL/6JRccHsd	043			+	17
	C57BL/6NHsd	044	+	+	+	17
	C57BL/6NHsd	112	+	+		17
C57BL/Ka	C57BL/KaLwRijHsd	940			+	20
CBA/Ca	CBA/CaOlaHsd	209		+	+	16
CBA	CBA/JCrHsd	055	+			20
DBA/1	DBA/1OlaHsd	105	+	+	+	18
DBA/2	DBA/2JRccHsd	343			+	18
	DBA/2NHsd	042	+			*
	DBA/2OlaHsd	870		+		18
FVB	FVB/NHan®Hsd	862		+	+	19
	FVB/NHsd	118	+			*
NIH	NIH/OlaHsd	059		+		20
SAMP8	SAMP8/TaHsd	954			+	19
SAMR1	SAMR1/TaHsd (control)	956			+	19
SJL	SJL/JCrHsd	052	+			20
OUTBRED MICE						
Black Swiss	Hsd:NIHBS	188				*
ICR (CD-1®)	Hsd:ICR (CD-1®)	030	+	+	+	21
ND4 Swiss Webster	Hsd:ND4	032	+			21
NIH Swiss	Hsd:NIHS	035	+	+		21
NMRI	HsdWin:NMRI	275			+	21
Non-Swiss Albino	Hsd:NSA (CF-1®)	033	+			*
TO	HsdOla:TO	876		+		21

[1] The breeding, supply and use of this strain is regulated under the Animals (Scientific Procedures) Act 1986 in the UK (EU Directive 2010/63). Supply to order in the UK is dependent on prior authority having been obtained from the Secretary of State through the UK Home Office Inspectorate. For supply outside the UK we require confirmation in writing, that the receiving establishment has the requisite authority (within that specific country) for the use of these specific animals in a research program. Animals will not be shipped without that written declaration.

* Not described in this guide. We invite inquiries about items not listed. Our Client Service and Technical Service representatives are ready to discuss your special requirements. We will work with you to select the stocks and strains that best suit your needs.

TO ORDER: refer to page 99

COMMON NAME	NOMENCLATURE	CODE	US	UK	NED	PG#
MUTANT MICE (Spontaneous)						
Nudes						
Athymic Nude	Hsd:Athymic Nude-*Foxn1^{nu}*	069	+	+[1]	+	25
	Hsd:Athymic Nude-*Foxn1^{nu}/Foxn1^{+}*	070	+	+	+	25
BALB/c Nude	BALB/cOlaHsd-*Foxn1^{nu}*	165			+[1]	26
	BALB/cOlaHsd-*Foxn1^{nu}/Foxn1^{+}*	886			+	26
NMRI Nude	HsdCpb:NMRI-*Foxn1^{nu}*	889			+	25
	HsdCpb:NMRI-*Foxn1^{nu}/Foxn1^{+}*	890			+	25
SCIDs						
NOD.SCID	NOD.CB17-*Prkdc^{scid}*/NCrHsd	170	+		+	28
SCID	C.B-17/IcrHan®Hsd-*Prkdc^{scid}*	883		+[1]	+	27
	C.B-17/IcrHsd-*Prkdc^{scid}*	182	+			27
SCID/Beige	C.B-17/IcrHsd-*Prkdc^{scid}Lyst^{bg-J}*	186	+		+	27
Diabetic						
Diabetic *(db/db)*	BKS.Cg- + *Lepr^{db}/+Lepr^{db}*/OlaHsd	173	+		+	29
	BKS.Cg-*Dock7^{m}*+/+ *Lepr^{db}*/OlaHsd	H174	+		+	29
	BKS.Cg-(Lean)/OlaHsd	174	+		+	29
Other						
Albino C57BL/6	C57BL/6BrdCrHsd-*Tyr^{c}*	103	+	+	+	28
GEMS MICE						
R2G2™	B6;129-*Rag2^{tm1Fwa}Il2rg^{tm1Rsky}*/DwlHsd	021	+	+[1]	+	30
B-NDG	NOD.CB17-*Prkdc^{scid}Il2rg^{tm1}*/BcgenHsd	126	+	+[1]	+	31
B-NDG B2m	NOD.CB17-*Prkdc^{scid}Il2rg^{tm1}B2m^{tm1}Fcgrt$^{tm1(B2m)}$*/BcgenHsd	405	+	+[1]	+	32
B-NDG hIL15	NOD.CB17-*Prkdc^{scid}Il2rg^{tm1}Il15$^{tm1(IL15)}$*/BcgenHsd	406	+	+[1]	+	33
COVID MICE						
hACE2	C57BL/6Hsd-*Ace2$^{em1(ACE2)Env}$*	492	+			36
hTmprss2	C57BL/6Hsd-*Tmprss2$^{em1(TMPRSS2)Env}$*	494	+			37
hACE2/hTmprss2	C57BL/6Hsd-*Ace2$^{em1(ACE2)Env}$Tmprss2$^{em1(TMPRSS2)Env}$*	495	+			38

[1] The breeding, supply and use of this strain is regulated under the Animals (Scientific Procedures) Act 1986 in the UK (EU Directive 2010/63). Supply to order in the UK is dependent on prior authority having been obtained from the Secretary of State through the UK Home Office Inspectorate. For supply outside the UK we require confirmation in writing, that the receiving establishment has the requisite authority (within that specific country) for the use of these specific animals in a research program. Animals will not be shipped without that written declaration.

* Not described in this guide. We invite inquiries about items not listed. Our Client Service and Technical Service representatives are ready to discuss your special requirements. We will work with you to select the stocks and strains that best suit your needs.

Note: Certain stocks and strains are stock to order and therefore not immediately available from inventory which results in a lead time being required to reserve the animals. Please discuss with your local Client Service representative for more information

TO ORDER: refer to page 99

COMMON NAME	NOMENCLATURE	CODE	US	UK	NED	PG#
HYBRID MICE **						
B6C3F1	B6C3F1/Hsd	061	+			*
	B6C3F1/OlaHsd	946			+	34
B6CBAF1	B6CBAF1/OlaHsd	045			+	35
B6D2F1	B6D2F1/Hsd	063	+			*
	B6D2F1/JRccHsd	344			+	34
CB6F1	CB6F1/Hsd	065	+			*
	CB6F1/OlaHsd	949			+	35
CD2F1	CD2F1/Hsd	060	+			35
CSJLF1	CSJLF1/HliHsd	969				*
INBRED RATS						
Brown Norway	BN/RijHsd	147	+			39
DA (Dark Agouti)	DA/OlaHsd	092	+	+		39
Fischer 344	F344/NHsd	010	+			40
Lewis	LEW/Han®Hsd	861		+		41
	LEW/SsNHsd	017	+			41
Spontaneously Hypertensive	SHR/NHsd	022	+			41
Wistar Kyoto	WKY/NHsd	023	+			42
OUTBRED RATS						
Holtzman®	HsdHot:Holtzman®	003	+			*
Lister Hooded	HsdOla:LH	119		+	+	46
Long Evans	HsdBlu:LE	140	+			47
Sprague Dawley®	Hsd:Sprague Dawley® SD®	002	+	+	+	45
Wistar	Hsd:WI	001	+			47
Wistar Han®	RccHan®:WIST	168	+	+	+	43

[1] The breeding, supply and use of this strain is regulated under the Animals (Scientific Procedures) Act 1986 in the UK (EU Directive 2010/63). Supply to order in the UK is dependent on prior authority having been obtained from the Secretary of State through the UK Home Office Inspectorate. For supply outside the UK we require confirmation in writing, that the receiving establishment has the requisite authority (within that specific country) for the use of these specific animals in a research program. Animals will not be shipped without that written declaration.

* Not described in this guide. We invite inquiries about items not listed. Our Client Service and Technical Service representatives are ready to discuss your special requirements. We will work with you to select the stocks and strains that best suit your needs.

** This is a brief selection of available hybrids; any combination can be bred on demand. Any existing hybrid combination can be discontinued at any time without prior notice

TO ORDER: refer to page 99

COMMON NAME	NOMENCLATURE	CODE	US	UK	NED	PG#
MUTANT RATS (Spontaneous)						
Nudes						
Athymic Nude	Hsd:RH-*Foxn1*^{mu}	005	+		+	47
	Hsd:RH-*Foxn1*^{mu}/*Foxn1*$^{+}$	006	+		+	47
Obese						
Zucker	HsdHlr:ZUCKER-*Lepr*^{fa}	194	+			48
	HsdHlr:ZUCKER-*Lepr*^{fa}/*Lepr*$^{+}$ (lean)	H195	+			48
	HsdHlr:ZUCKER-*Lepr*$^{+}$ (lean)	W195	+			48
GEMS RATS						
Pink1	HsdSage: LE-*Pink1*^{tm1Sage}	372	+			49
Mdr1a	HsdSage: SD-*Mdr1a*^{tm1sage}	364	+			50
Mdr1a-Bcrp	HsdSage: SD-*Mdr1a*^{tm1sage} *Abcg2*^{tm1sage}	363	+			51
COVID RATS						
hACE2	Hsd:SD-*Ace2*$^{em1(ACE2)Env}$	493	+			52
HYBRID RATS						
Any hybrid combination will be bred on demand, please enquire.						
GUINEA PIGS						
Dunkin Hartley	HsdDhl:DH	459			+	56
HAMSTERS						
Golden Syrian	HsdHan®:AURA	089	+	+		55
COTTON RATS						
Cotton Rat	Hsd:Cotton Rat	201	+			55
RABBITS						
New Zealand White	HsdHra:(NZW) SPF	221	+			57
	Hsdlf:NZW	444		+		57
	HsdOkd:NZW	081				57
	HsdHra:DB (SPF)	222	+			57
NONHUMAN PRIMATES						
Cynomolgus macaques	*M. fascicularis*	226/228	+			58
Rhesus macaques	*M. mulatta*	224	+			58

* Not described in this guide. We invite inquiries about items not listed. Our Client Service and Technical Service representatives are ready to discuss your special requirements. We will work with you to select the stocks and strains that best suit your needs.

Note: Certain stocks and strains are stock to order and therefore not immediately available from inventory which results in a lead time being required to reserve the animals. Please discuss with your local Client Service representative for more information

TO ORDER: refer to page 99

Production locations
WORLDWIDE RESEARCH SERVICES

	US	UK	NED	FRA	ITA	ESP
TEKLAD GLOBAL DIETS® AND BEDDING						
Standard Diets (pelleted and extruded)	✓		✓		✓	
Autoclavable Diets	✓				✓	
Irradiated Diets	✓				✓	
Certified Diets	✓		✓		✓	
Medicated Diets	✓		✓			
Custom Research Diets	✓				✓	
Bedding	✓					
Cage Enrichment	✓					
Cage Liners	✓					
PRECONDITIONED MODELS						
Aging Research Models	✓	✓	✓			
Animal Model Development	✓					
Animal Identification (tattooing, implantation etc.)	✓	✓	✓	✓	✓	
Diabetic Induced Models (STZ induced)						
Diet-Induced Obesity Models	✓	✓	✓	✓		
Diet Maintenance Studies	✓	✓	✓	✓	✓	
Custom genetically engineered rodent models	✓					
Tumor Models and Services	✓					
GENETIC TESTING SERVICES						
PCR Zygosity Testing	✓	✓				
Inbred Strain Verification	✓	✓				
Gene Expression	✓	✓				
Speed Congenics	✓	✓				
Prevalidated SNP Zygosity Testing	✓	✓				
Prevalidated Reporter and Conditional Model Testing	✓					
SURGICAL SERVICES						
Surgical Services	✓	✓	✓			
HEALTH MONITORING						
Serology					✓	
Bacteriology					✓	
Parasitology					✓	
Pathology					✓	
Molecular Biology					✓	
BIOLOGICAL PRODUCTS						
Serum	✓	✓	✓			
Plasma	✓	✓	✓			
Complement	✓	✓				
Tissues, Organs, Glands	✓	✓				
Whole Embryo Culture Serum	✓					
EGF, 2.5S and 7.0S Nerve Growth Factor	✓					
Cytokines	✓					

	US	UK	NED	FRA	ITA	ESP
PROCESSING AND CELL LINE SERVICES						
Bioburden Testing	✓					
Endotoxin Testing	✓					
Sterility Testing	✓					
Subcloning	✓					
Cell Banking	✓	✓				
Cell Line Sterility	✓					
Cell Line Viability Testing	✓					
Mycoplasma Cleanup	✓					
Cell Weaning	✓					
Cell Recovery	✓					
Cell Line Isotyping	✓					
IgG Concentration Testing	✓					
CUSTOM ANTIBODY PRODUCTION						
cGMP In Vivo Production (Diagnostic and Therapeutic Use)	✓					
Non-cGMP In Vivo Production (Research Use)	✓					
In Vitro Monoclonal Antibody Production (cGMP and Research Use)	✓					
Research Scale In Vitro Monoclonal Production	✓					
Hybridoma Development	✓					
Polyclonal Antibody Production	✓					
Mouse Antibody Production (MAP) Testing	✓					
Antibody Purification	✓					
Fragmentation/Conjugation	✓					
COLONY MANAGEMENT SERVICES						
Maintenance Research Models	✓	✓	✓	✓		
Contract Breeding	✓	✓	✓	✓		
Import/Export Services	✓	✓	✓	✓		
Quarantine	✓	✓				
FACILITY SERVICES						
Facility Management						✓
TRANSGENIC SERVICES						
Embryo Transfer		✓				
Cryopreservation		✓				
Revitalization		✓				
Sperm Cell Freezing		✓				

Although the above Research Model Services are listed by location, these are globally available.
Items Not Listed - We invite inquiries about services not listed in this overview. Our Technical Service representatives are ready to discuss your special requirements. We will work with you to select the services that best suit your needs.

TO ORDER: refer to page 99

MODEL CODE
215

129

NOMENCLATURE: 129S2/SvHsd (code 215)

AGE (weeks)	PRICE PER ANIMAL
3	€ 97,15
4	€ 105,30
5	€ 109,35
6	€ 115,70
7	€ 122,15
8	€ 130,35
9	€ 139,30
Over 9 weeks, add per week	€ 4,60

Black-eyed, light bellied, agouti. Developed by Dunn in 1928 from a cross of coat color stocks and a chinchilla stock from Castle.

- Characteristics
- Low preference for sweet tasting substances

- Research use
- Used in the production of targeted mutations due to the availability of several lines of embryonic stem cells.
- Used in gene targeting studies

MODEL CODE
049

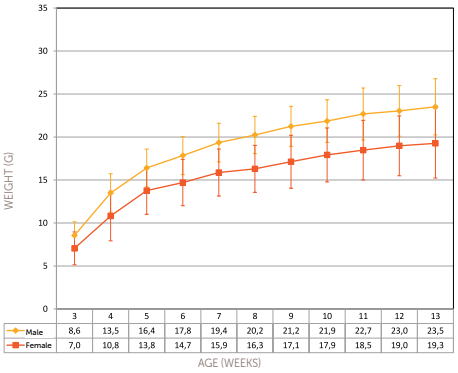
A

NOMENCLATURE: A/JOlaHsd (code 049)

AGE (weeks)	PRICE PER ANIMAL
3	€ 60,75
4	€ 66,45
5	€ 73,90
6	€ 82,15
7	€ 91,50
8	€ 102,10
9	€ 113,60
Over 9 weeks, add per week	€ 12,85

Albino. From G.D.Searle to Harlan Olac, United Kingdom, in 1978; to Harlan, United States, in 1993. Harlan became Envigo in 2015, then Envigo was acquired by Inotiv in 2021.

A/JOlaHsd



	3	4	5	6	7	8	9	10	11	12	13
Male	8,6	13,5	16,4	17,8	19,4	20,2	21,2	21,9	22,7	23,0	23,5
Female	7,0	10,8	13,8	14,7	15,9	16,3	17,1	17,9	18,5	19,0	19,3

GROWTH CHART DATA SHOULD BE USED AS A GUIDELINE ONLY.
ANIMALS WERE BRED AND MAINTAINED ON TEKLAD GLOBAL 2018S DIET.

TO ORDER: refer to page 99

MODEL CODE
162

BALB/c

NOMENCLATURE: BALB/cOlaHsd

AGE (weeks)	PRICE PER ANIMAL
3	€ 15,90
4	€ 17,30
5	€ 18,60
6	€ 20,55
7	€ 22,30
8	€ 24,15
9	€ 27,20
Over 9 weeks, add per week	€ 3,05
Untimed pregnant female*	€ 133,20
Time mated female*	€ 184,90
Female with litter	€ 176,45
Proven breeder	€ 41,90
Retired breeder/Surplus	€ 24,45

* For our pregnancy policy, refer to page 99.

Albino. BALB/cOlaHsd mice originate from the Laboratory Animal Centre, Carshalton UK from the Jackson Laboratory, Bar Harbor, Maine in 1955. In 1976 to Olac (now Inotiv).

CHARACTERISTICS

- Litter average: 6.0
- Docile disposition
- Haplotype: *H-2*^{d}
- Experimental allergic encephalomyelitis resistant

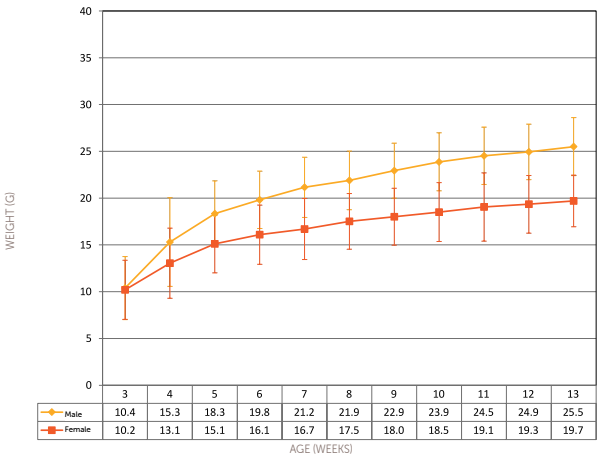
ADDITIONAL AVAILABLE DATA

- Hematology
- Clinical chemistry

RESEARCH USE

- Cardiovascular
- Monoclonal antibody production
- Toxicology
- Pharmacology
- Aging
- Teratology
- General purpose

BALB/cOlaHsd



	3	4	5	6	7	8	9	10	11	12	13
Male	10.4	15.3	18.3	19.8	21.2	21.9	22.9	23.9	24.5	24.9	25.5
Female	10.2	13.1	15.1	16.1	16.7	17.5	18.0	18.5	19.1	19.3	19.7

GROWTH CHART DATA SHOULD BE USED AS A GUIDELINE ONLY.
ANIMALS WERE BRED AND MAINTAINED ON TEKLAD GLOBAL 2018S DIET.

MODEL CODE
113

BALB/c

Biosecure Plus™ -
Isolator raised, SOPF health status

NOMENCLATURE: BALB/cAnNHsd

AGE (weeks)	PRICE PER ANIMAL
3	P.O.R.
4	P.O.R.
5	P.O.R.
6	P.O.R.
7	P.O.R.
8	P.O.R.
9	P.O.R.
10	P.O.R.
11	P.O.R.
12	P.O.R.
Over 12 weeks, add per week	P.O.R.
Female with litter	P.O.R.
Retired breeder	P.O.R.

* For our pregnancy policy, refer to page 99.

Albino. Derived from a nucleus colony obtained from the National Institutes of Health, Bethesda, Maryland.

CHARACTERISTICS

- Litter average: 6.0
- Docile disposition
- Haplotype: *H-2*^{d}
- Experimental allergic encephalomyelitis resistant

RESEARCH USE

- Cardiovascular
- Monoclonal antibody production
- Toxicology
- Oncology
- Immunology
- Pharmacology
- Aging
- Teratology
- General purpose

TO ORDER: refer to page 99

MODEL CODE
040

C3H

NOMENCLATURE: C3H/HeΝHsd

AGE (weeks)	PRICE PER ANIMAL
3	€ 29,20
4	€ 32,00
5	€ 35,25
6	€ 38,95
7	€ 41,70
8	€ 45,95
9	€ 49,75
Over 9 weeks, add per week	€ 4,45
Untimed pregnant female*	€ 284,20
Time mated female*	€ 345,45
Female with litter	€ 378,00
Proven breeder	€ 87,15
Retired breeder/Surplus	€ 47,60

* For our pregnancy policy, refer to page 99.

Agouti. Derived from a nucleus colony obtained from the National Institutes of Health, Bethesda, Maryland.

CHARACTERISTICS

- Litter average: 5.0
- Haplotype: *H-2*^{k}
- Carrier of the retinal degeneration (*Pde6b*^{rd1}) mutation
- Normal response to LPS
- Highly susceptible to Anthrax toxin

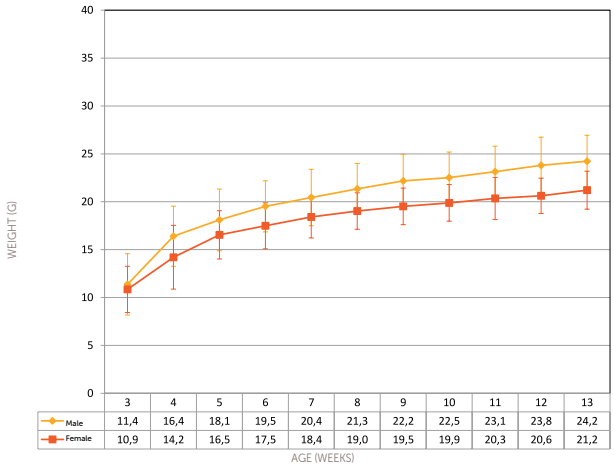
RESEARCH USE

- General purpose
- Ocular disease
- Immunology

ADDITIONAL AVAILABLE DATA

- Clinical chemistry
- Hematology

C3H/HeΝHsd



	3	4	5	6	7	8	9	10	11	12	13
Male	11,4	16,4	18,1	19,5	20,4	21,3	22,2	22,5	23,1	23,8	24,2
Female	10,9	14,2	16,5	17,5	18,4	19,0	19,5	19,9	20,3	20,6	21,2

GROWTH CHART DATA SHOULD BE USED AS A GUIDELINE ONLY.
ANIMALS WERE BRED AND MAINTAINED ON TEKLAD GLOBAL 2018S DIET.

TO ORDER: refer to page 99

MODEL CODE
209

CBA/Ca

NOMENCLATURE: CBA/CaOlaHsd

AGE (weeks)	PRICE PER ANIMAL
3	€ 26,75
4	€ 30,15
5	€ 33,75
6	€ 37,75
7	€ 41,55
8	€ 45,10
9	€ 50,05
Over 9 weeks, add per week	€ 4,50
Untimed pregnant female*	€ 186,85
Time mated female*	€ 264,15
Female with litter	€ 243,05
Proven breeder	€ 66,85
Retired breeder/Surplus	€ 35,70

* For our pregnancy policy, refer to page 99.

Agouti. Obtained by the Laboratory Animal Centre, Carshalton UK from Atomic Energy Establishment, Harwell in 1956 and then to Olac in 1976 (now Inotiv).

MODEL CODE
057

C57BL/6

NOMENCLATURE: C57BL/6JOlaHsd

AGE (weeks)	PRICE PER ANIMAL
3	€ 17,70
4	€ 19,35
5	€ 21,35
6	€ 23,80
7	€ 26,35
8	€ 29,30
9	€ 32,80
Over 9 weeks, add per week	€ 3,55
Untimed pregnant female*	€ 154,85
Time mated female*	€ 211,00
Female with litter	€ 194,15
Proven breeder	€ 58,30
Retired breeder/Surplus	€ 29,30

* For our pregnancy policy, refer to page 99.

Black. C57BL/6JOlaHsd mice originate from the Jackson Laboratory, Bar Harbor, Maine. In 1974 to the Laboratory Animal Centre, Carshalton UK. To Olac in 1983 (now Inotiv).

CHARACTERISTICS

- Litter average: 6.0
- Haplotype: *H-2*^{b}
- Most widely used inbred strain
- Low tumor incidence
- High preference for alcohol
- Microphthalmia
- Incidence of Hydrocephalous
- The C57BL/6JOlaHsd subline carries a deletion at the alpha synuclein locus

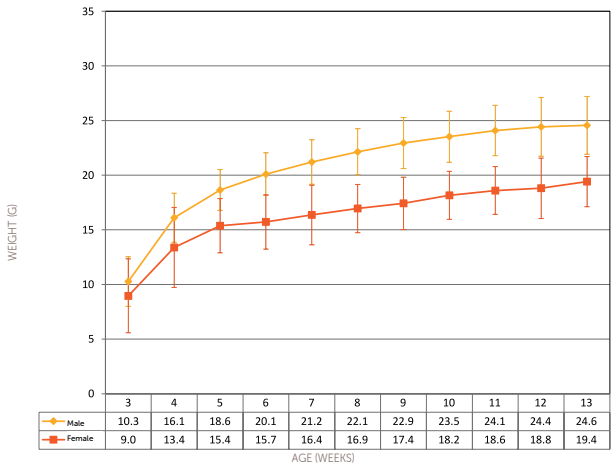
RESEARCH USE

- Background for induced and genetically modified models
- Diet induced obesity
- Toxicology
- Aging
- Cardiovascular
- Superovulation
- Immunology
- Drug addiction
- Alcoholism
- General purpose

ADDITIONAL AVAILABLE DATA

- Hematology
- Clinical chemistry

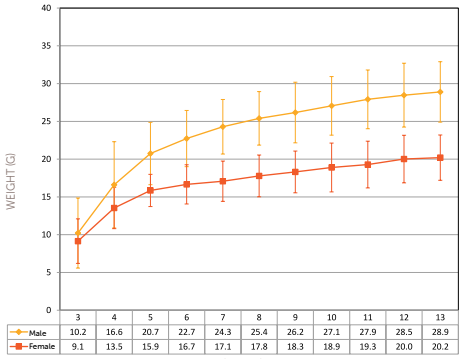
CBA/CaOlaHsd



	3	4	5	6	7	8	9	10	11	12	13
Male	10.3	16.1	18.6	20.1	21.2	22.1	22.9	23.5	24.1	24.4	24.6
Female	9.0	13.4	15.4	15.7	16.4	16.9	17.4	18.2	18.6	18.8	19.4

GROWTH CHART DATA SHOULD BE USED AS A GUIDELINE ONLY.
ANIMALS WERE BRED AND MAINTAINED ON TEKLAD GLOBAL 2018S DIET.

C57BL/6JOlaHsd



	3	4	5	6	7	8	9	10	11	12	13
Male	10.2	16.6	20.7	22.7	24.3	25.4	26.2	27.1	27.9	28.5	28.9
Female	9.1	13.5	15.9	16.7	17.1	17.8	18.3	18.9	19.3	20.0	20.2

GROWTH CHART DATA SHOULD BE USED AS A GUIDELINE ONLY.
ANIMALS WERE BRED AND MAINTAINED ON TEKLAD GLOBAL 2018S DIET.

TO ORDER: refer to page 99

MODEL CODES
043, 044

C57BL/6

NOMENCLATURE: C57BL/6JRccHsd (code 043)
NOMENCLATURE: C57BL/6NHsd (code 044)

AGE (weeks)	PRICE PER ANIMAL
3	€ 21,00
4	€ 23,70
5	€ 26,25
6	€ 29,20
7	€ 32,60
8	€ 36,00
9	€ 39,40
Over 9 weeks, add per week	€ 4,45
Untimed pregnant female*	€ 193,55
Time mated female*	€ 263,80
Female with litter	€ 242,70
Proven breeder	€ 72,95
Retired breeder/Surplus	€ 36,55

* For our pregnancy policy, refer to page 99.

Black. C57BL/6NHsd; Derived from a nucleus colony obtained from the National Institutes of Health, Bethesda, Maryland.

The C57BL/JRccHsd mice originate from Jackson Laboratory, Bar Harbor, Maine and were moved in 1973 to RCC Ltd. (formerly Ibm and BRL) in Füllinsdorf, Switzerland. To Harlan Laboratories through acquisition in 2004. Harlan became Envigo in 2015, then Envigo was acquired by Inotiv in 2021.

CHARACTERISTICS

- Litter average: 6.0
- Haplotype: *H-2*^{b}
- Most widely used inbred strain
- Low tumor incidence
- High preference for alcohol
- Microphthalmia
- Incidence of Hydrocephalous
- The C57BL/6JRccHsd subline does not carry the Nnt (nicotinamide nucleotide transhydrogenase) gene – deletion
- The C57BL/6NHsd subline carries a retinal degeneration 8 mutation (*rd8*)

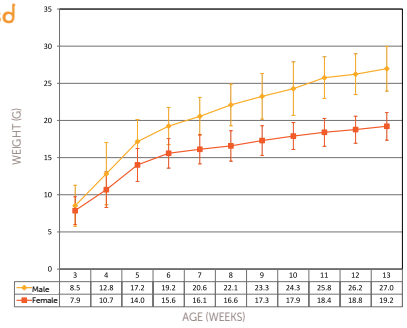
RESEARCH USE

- Background for induced and genetically modified models
- Diet induced obesity
- Toxicology
- Aging
- Cardiovascular
- Superovulation
- Immunology
- Drug addiction
- Alcoholism
- General purpose

ADDITIONAL AVAILABLE DATA

- Hematology
- Clinical chemistry

C57BL/6JRccHsd



GROWTH CHART DATA SHOULD BE USED AS A GUIDELINE ONLY.
ANIMALS WERE BRED AND MAINTAINED ON TEKLAD GLOBAL 2018S DIET.

MODEL CODE
112

C57BL/6

Biosecure Plus™ -
Isolator raised, SOPF health status
NOMENCLATURE C57BL/6NHsd

AGE (weeks)	PRICE PER ANIMAL
3	P.O.R.
4	P.O.R.
5	P.O.R.
6	P.O.R.
7	P.O.R.
8	P.O.R.
9	P.O.R.
10	P.O.R.
11	P.O.R.
12	P.O.R.
Over 12 weeks, add per week	P.O.R.
Female with litter	P.O.R.
Retired breeder	P.O.R.

* For our pregnancy policy, refer to page 99.

Black. Derived from a nucleus colony obtained from the National Institutes of Health, Bethesda, Maryland.

CHARACTERISTICS

- Litter average: 6.0
- Haplotype: *H-2*^{b}
- Most widely used inbred strain
- Low tumor incidence
- High preference for alcohol
- Microphthalmia
- Incidence of Hydrocephalous

RESEARCH USE

- Background for induced and genetically modified models
- Diet induced obesity
- Toxicology
- Aging
- Cardiovascular
- Superovulation
- Immunology
- Oncology

TO ORDER: refer to page 99

MODEL CODE
105

DBA/1

NOMENCLATURE: DBA/1OlaHsd

AGE (weeks)	PRICE PER ANIMAL
3	€ 44,80
4	€ 51,05
5	€ 57,45
6	€ 63,85
7	€ 69,65
8	€ 75,90
9	€ 83,95
Over 9 weeks, add per week	€ 7,15
Untimed pregnant female*	€ 264,00
Time mated female*	€ 365,20
Female with litter	€ 368,20
Proven breeder	€ 91,60
Retired breeder/Surplus	€ 47,60

* For our pregnancy policy, refer to page 99.

Dilute brown, non-agouti. Originally developed by Little. Acquired by Laboratory Animals Centre, Carshalton, United Kingdom in 1955; to Olac (now Inotiv) in 1979.

CHARACTERISTICS

- Litter average: 4.5
- Haplotype: *H-2*^{q}

RESEARCH USE

- Adjuvant-induced arthritis
- Immunology
- Inflammation

MODEL CODES
870, 343

DBA/2

NOMENCLATURE: DBA/2OlaHsd (code 870)
NOMENCLATURE: DBA/2JRccHsd (code 343)

AGE (weeks)	PRICE PER ANIMAL
3	€ 27,20
4	€ 29,00
5	€ 30,75
6	€ 33,20
7	€ 36,45
8	€ 38,30
9	€ 42,25
Over 9 weeks, add per week	€ 5,60
Untimed pregnant female*	€ 316,60
Time mated female*	€ 438,00
Female with litter	€ 429,00
Proven breeder	€ 123,30
Retired breeder/Surplus	€ 62,00

* For our pregnancy policy, refer to page 99.

Dilute brown, non-agouti. Originally developed by Little. Acquired by Laboratory Animal Centre, Carshalton UK. In 1972 to Olac (now Inotiv).

The DBA/2JRccHsd mice originate from Jackson Laboratory, Bar Harbor, Maine and were moved in 1974 to RCC Ltd. (formerly Ibm and BRL) in Füllinsdorf, Switzerland. To Harlan Laboratories through acquisition in 2004. Harlan became Envigo in 2015, then Envigo was acquired by Inotiv in 2021.

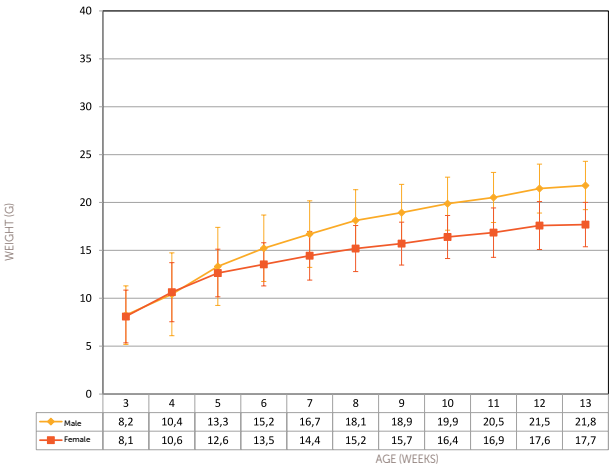
CHARACTERISTICS

- Litter average: 4.5
- Haplotype: *H-2*^{d}
- Dystrophic myocardial calcinosis

RESEARCH USE

- Progressive hearing loss
- Audiogenic seizures

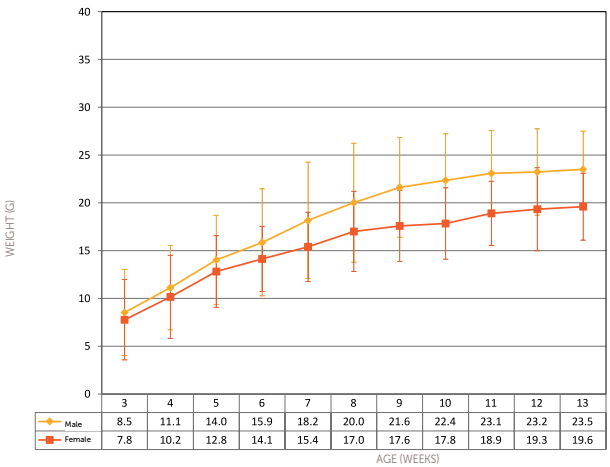
DBA/1OlaHsd



	3	4	5	6	7	8	9	10	11	12	13
Male	8,2	10,4	13,3	15,2	16,7	18,1	18,9	19,9	20,5	21,5	21,8
Female	8,1	10,6	12,6	13,5	14,4	15,2	15,7	16,4	16,9	17,6	17,7

GROWTH CHART DATA SHOULD BE USED AS A GUIDELINE ONLY.
ANIMALS WERE BRED AND MAINTAINED ON TEKLAD GLOBAL 2018S DIET.

DBA/2JRccHsd



	3	4	5	6	7	8	9	10	11	12	13
Male	8.5	11.1	14.0	15.9	18.2	20.0	21.6	22.4	23.1	23.2	23.5
Female	7.8	10.2	12.8	14.1	15.4	17.0	17.6	17.8	18.9	19.3	19.6

GROWTH CHART DATA SHOULD BE USED AS A GUIDELINE ONLY.
ANIMALS WERE BRED AND MAINTAINED ON TEKLAD GLOBAL 2018S DIET.

TO ORDER: refer to page 99

MODEL CODE
862

FVB

NOMENCLATURE: FVB/NHan®Hsd

AGE (weeks)	PRICE PER ANIMAL
3	€ 19,70
4	€ 22,25
5	€ 24,75
6	€ 28,05
7	€ 31,40
8	€ 34,40
9	€ 39,35
Over 9 weeks, add per week	€ 4,60
Untimed pregnant female*	€ 186,10
Time mated female*	€ 232,60
Female with litter	€ 232,05
Proven breeder	€ 57,00
Retired breeder/Surplus	€ 28,55

* For our pregnancy policy, refer to page 99.

Albino. Derived from a nucleus colony obtained from the National Institutes of Health, Bethesda, Maryland, in 1988. In 1994 to Harlan Laboratories through acquisition of Central Institute for Laboratory Animal Breeding (ZfV), Hannover, Germany. Harlan became Envigo in 2015, then Envigo was acquired by Inotiv in 2021.

Han® is a registered trademark of Inotiv.

MODEL CODES
954, 956

SAM

NOMENCLATURE: SAMP8/TaHsd (code 954)
NOMENCLATURE: SAMR1/TaHsd (control) (code 956)

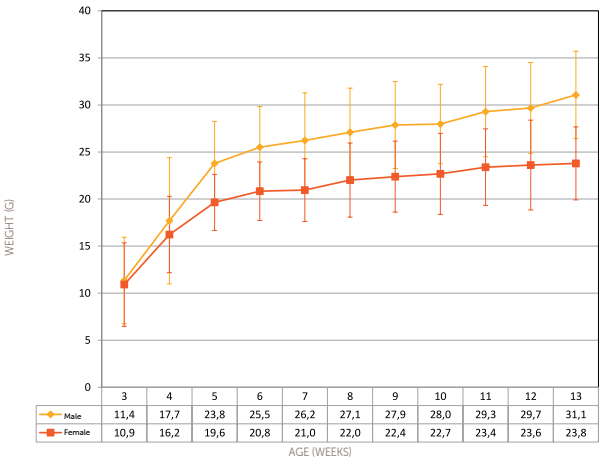
AGE (weeks)	PRICE PER ANIMAL
4	€ 333,35
5	€ 350,35
6	€ 372,10
7	€ 391,20
Over 7 weeks, add per week	€ 17,30

Albino. SAM models were developed from AKR/J by Kyoto University. Five litters with severe senescence were selected to further propagate and examine these characteristics. Litters that showed normal aging were selected as a senescence-resistant series (R-series). The genetic background of the SAM mice became suspect after the pathological findings were different from the AKR/J mouse. Each SAM model is genetically different. Each SAM colony was acquired by Harlan from Takeda Chemical Ltd. in 2002. Harlan became Envigo in 2015, then Envigo was acquired by Inotiv in 2021.

RESEARCH USE

- Accelerated senescence studies
- Aging process
- Geriatric pathogenesis
- Age-dependent disorders
- Senile amyloidosis (apolipoprotein A-II)
- Senile osteoporosis
- Impaired immune response
- Hyperinflation of the lungs
- Hearing impairment
- Deficits in learning and memory
- Emotional disorders
- Brain atrophy

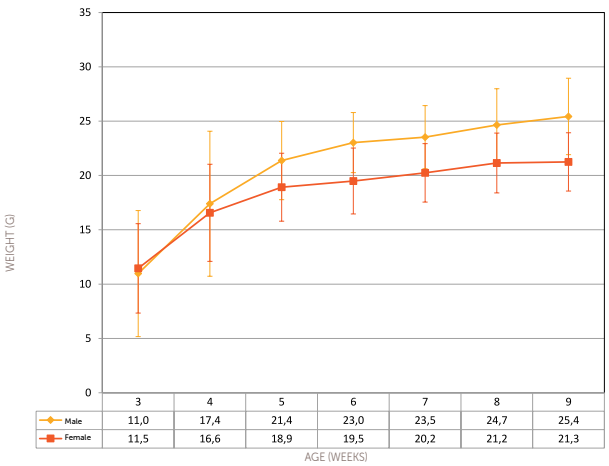
FVB/NHan®Hsd



	3	4	5	6	7	8	9	10	11	12	13
Male	11,4	17,7	23,8	25,5	26,2	27,1	27,9	28,0	29,3	29,7	31,1
Female	10,9	16,2	19,6	20,8	21,0	22,0	22,4	22,7	23,4	23,6	23,8

GROWTH CHART DATA SHOULD BE USED AS A GUIDELINE ONLY.
ANIMALS WERE BRED AND MAINTAINED ON TEKLAD GLOBAL 2018S DIET.

SAMP8/TaHsd



	3	4	5	6	7	8	9
Male	11,0	17,4	21,4	23,0	23,5	24,7	25,4
Female	11,5	16,6	18,9	19,5	20,2	21,2	21,3

GROWTH CHART DATA SHOULD BE USED AS A GUIDELINE ONLY.
ANIMALS WERE BRED AND MAINTAINED ON TEKLAD GLOBAL 2018S DIET.

TO ORDER: refer to page 99

MODEL CODE
052

SJL

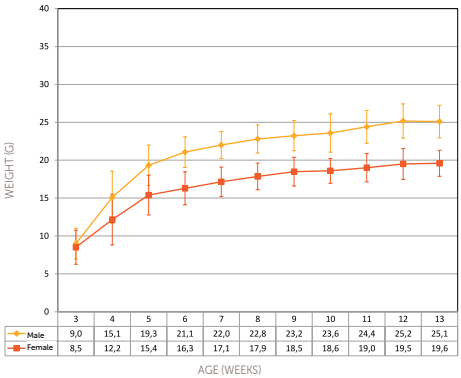
NOMENCLATURE: SJL/JCrHsd

AGE (weeks)	PRICE PER ANIMAL
3	€ 84,50
4	€ 89,25
5	€ 100,80
6	€ 103,65
7	€ 109,35
8	€ 132,15
9	€ 145,25
Over 9 weeks, add per week	€ 8,05
Untimed pregnant female*	€ 749,60
Female with litter	€ 881,75

* For our pregnancy policy, refer to page 99.

Albino. SJL/JCrHsd from the Jackson Laboratories, Bar Harbor, Maine, to National Institutes of Health, Frederick, Maryland in 1983 to Harlan in 1987. Harlan became Envigo in 2015, then Envigo was acquired by Inotiv in 2021.

SJL/JCrHsd



AGE (weeks)	3	4	5	6	7	8	9	10	11	12	13
Male	9,0	15,1	19,3	21,1	22,0	22,8	23,2	23,6	24,4	25,2	25,1
Female	8,5	12,2	15,4	16,3	17,1	17,9	18,5	18,6	19,0	19,5	19,6

GROWTH CHART DATA SHOULD BE USED AS A GUIDELINE ONLY.
ANIMALS WERE BRED AND MAINTAINED ON TEKLAD GLOBAL 2018S DIET.

Additional strains of inbred mice

STRAINS	AGE (weeks)	PRICE PER ANIMAL
CBA/JCrHsd (code 055)	3	€ 55,70
NIH/OlaHsd (code 059)	3	€ 29,45
Over 3 weeks, add per week		€ 19,90
BALB/cAnNHsd (code 047)	3	€ 35,90
C57BL/KaLwRijHsd (code 940)	3	€ 59,30
Over 3 weeks, add per week		€ 13,30

Cohorts of the below listed male and female mice are reserved each month for the intended purpose of providing aged animals for research. Pricing of aged animals from inventory is listed below. If the requested aged animals are not available from our inventory, Inotiv will age animals to accommodate your research requirements.

Aged mice

NOMENCLATURE: C57BL/6JRccHsd (code 043)

AGE (months)	PRICE PER ANIMAL
3	€ 38,35
4	€ 50,75
5	€ 62,55
6	€ 74,90
7	€ 86,35
8	€ 98,45
9	€ 109,60
10	€ 121,75
11	€ 132,40
12	€ 144,35
13	€ 160,40
14	€ 175,05
15	€ 189,55
16	€ 204,30
17	€ 219,00
18	€ 233,45
Over 18 months, add per month	€ 18,15
Over 21 months, add per month	€ 21,75

RESEARCH USE

- Memory
- Osteoarthritis
- Neoplasia
- Immune response
- Longevity
- Vision and hearing
- Motor skills
- Renal degeneration
- Age-associated pathology
- Metabolism
- Neurobiology
- Cardiovascular
- Reproductive senescence

COMMON AGE-ASSOCIATED CONDITIONS INCLUDE:

- Hair loss
- Loss of motor skills and sensory perception
- Presence of spontaneous tumors
- Reduced immunologic and physiologic function
- Loss of vision, e.g. retinal degeneration, development of cataracts

When planning for your aged animal requirements, please consider the need to reserve extra animals on your order to replace any losses due to natural causes.

TO ORDER: refer to page 99

MODEL CODE
030

ICR (CD-1®)

NOMENCLATURE: Hsd:ICR (CD-1®)

WEIGHT (g)	PRICE PER ANIMAL
1-10	€ 6,05
11-15	€ 6,30
16-20	€ 6,75
21-25	€ 7,25
26-30	€ 7,90
Over 6 weeks, add per week	€ 4,50
Untimed pregnant female*	€ 65,45
Time mated female*	€ 99,10
Female with litter	€ 104,95
Proven breeder	€ 38,35
Retired breeder/Surplus	€ 6,70

* For our pregnancy policy, refer to page 99.

Albino. Derived from animals from Charles River Laboratories, Wilmington, Massachusetts.

CD-1® is a registered trademark of Charles River Laboratories, USA

CHARACTERISTICS

- Litter average: 11.5
- Docile disposition
- Most widely used outbred mouse
- Excellent reproductive and maternal characteristics
- High incidence of retinal degeneration (*Pde6b*^{rd1})

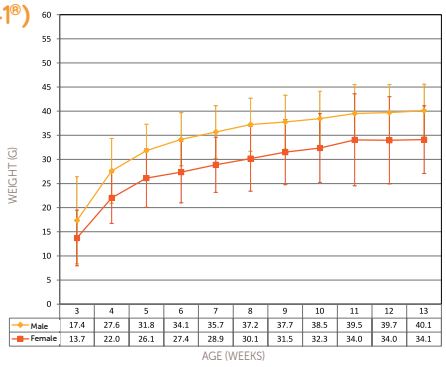
RESEARCH USE

- Oncology
- Toxicology
- Vaccines
- Aging
- Teratology
- General purpose

ADDITIONAL AVAILABLE DATA

- Hematology
- Clinical chemistry
- Two-year growth and survival
- Organ weights

Hsd:ICR (CD-1®)



GROWTH CHART DATA SHOULD BE USED AS A GUIDELINE ONLY.
ANIMALS WERE BRED AND MAINTAINED ON TEKLAD GLOBAL 2018S DIET.

MODEL CODE
275

NMRI

NOMENCLATURE: HsdWin:NMRI

WEIGHT (g)	PRICE PER ANIMAL
1-10	€ 6,45
11-15	€ 6,70
16-20	€ 7,25
21-25	€ 7,95
26-30	€ 8,85
Over 6 weeks, add per week	€ 3,65
Untimed pregnant female*	€ 58,05
Time mated female*	€ 67,50
Female with litter	€ 72,75
Proven breeder	€ 15,55
Retired breeder/Surplus	€ 8,05

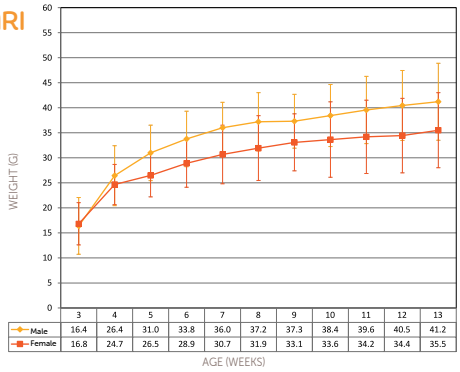
* For our pregnancy policy, refer to page 99.

Albino. From Naval Medical Research Institute in 1958 to Central Institute for Laboratory Animal Breeding (ZfV), Hannover, Germany.
In 1981 to Winkelmann, now Inotiv.

ADDITIONAL AVAILABLE DATA

- Hematology
- Clinical chemistry
- Organ weights

HsdWin:NMRI



GROWTH CHART DATA SHOULD BE USED AS A GUIDELINE ONLY.
ANIMALS WERE BRED AND MAINTAINED ON TEKLAD GLOBAL 2018S DIET.

Additional stocks of outbred mice

STOCK	AGE (weeks)	PRICE PER ANIMAL
Hsd:ND4 (code 032)	3	€ 13,60
Hsd:NIHS (code 035)	3	€ 29,05
HsdOla:TO (code 876)	3	€ 15,15
Over 3 weeks, add per week		€ 3,65

TO ORDER: refer to page 99

Proven performance. Globally referenced.

Researchers choose Inotiv oncology models for tumor uptake and growth. Our models have been extensively referenced by leading institutions around the world.

MODEL	PAGE	HAIR	T CELLS	B CELLS	NK CELLS
Athymic Nude Mouse	25,26	No	Nonfunctional	Functional	Functional
SCID Mouse	27	Yes	Nonfunctional	Nonfunctional	Functional
SCID/Beige Mouse	27	Yes	Nonfunctional	Nonfunctional	Impaired
NOD.SCID Mouse	28	Yes	Nonfunctional	Nonfunctional	Impaired
Athymic Nude Rat	47	No	Nonfunctional	Functional	Functional
Rag2 Rat	*	Yes	Nonfunctional	Nonfunctional	Functional
R2G2™ Mouse	30	Yes	Nonfunctional	Nonfunctional	Nonfunctional
B-NDG Mouse	31	Yes	Nonfunctional	Nonfunctional	Nonfunctional
B-NDG B2m Mouse	32	Yes	Nonfunctional	Nonfunctional	Nonfunctional
B-NDG hIL15 Mouse	33	Yes	Nonfunctional	Nonfunctional	Nonfunctional

Models

Global availability of high-quality models with proven performance in tumor growth.

Pages 25-28, 47

Diets

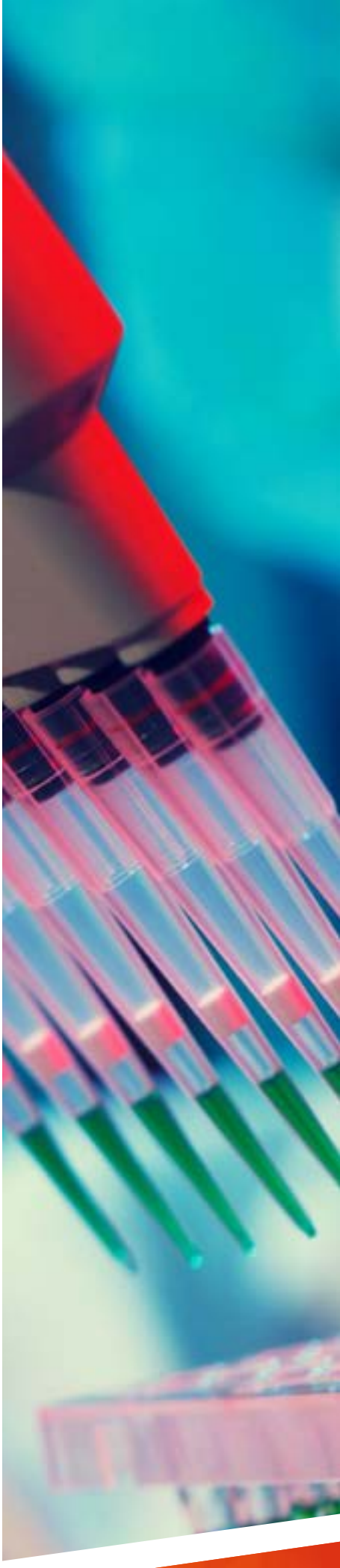
Largest global provider of lab animal diets designed to minimize research variables.

Pages 60

Services

Tumor models and services, custom model generation, genetic testing, and antibody production.

Pages 24, 70, 87, 95-98



Choose the right rodent model for your oncology research.

Below is a representation of the cell lines used successfully with Inotiv models.

RODENT TISSUE	CELL LINES	NUDE MICE	SCID MICE	NUDE RATS	C57 MICE
Brain (rat glioma)	C6 [58, 59, 78, 140, 180]	+	+		
Liver	MC38-Luc1 [387]				+
Lung (murine)	LL2 [10]	+			
Lymphoma	E.G7-OVA [373]				+
Melanoma (murine)	B16F10 [35, 36, 250]	+			

PATIENT-DERIVED TUMORS (HUMAN TISSUE)	CELL LINES	NUDE MICE	SCID MICE	NUDE RATS
Brain	(PDX) [271]	+		
Breast	HBCX 1 [270]	+		
	HBCX 6 [270]	+		
	HBCX 7 [270]	+		
	HBCX 9 [270]	+		
	TNBC (MC1) [273]		+	
	MC1 [274]		+	
	BMC-2147 [274]		+	
Liver	AKH23 [307]		+	
	KFJ18 [307]		+	
Lung	(NSCLC PDX) [272]		+	
Pancreatic	JH033 [272]	+		

HUMAN TISSUE	CELL LINES	NUDE MICE	SCID MICE	NUDE RATS
Bladder	KU-7 [148, 149, 150, 151]	+		
	T24 [52]			+
Brain	A-172 [198]	+		
	G55 [3]			+
	HTLA-230 [5, 125]	+	+	
	SH-SY5Y [2]			+
	TB10 [200]	+		
	U251 [81, 202]	+		
	U251 MG [198, 199]	+		
	U251-NG2 [1, 285]	+		
	U87 [71, 81, 117, 173, 196]	+	+	
	U87ΔEGFR [197]	+		
	U87 MG [4, 78, 80, 83, 133, 134, 164, 195,198, 201, 205, 206, 209, 224, 249]	+	+	+
	U87Fluc [79, 82]	+		
	U87MG.wt EGFR [203]	+		
	U87-TARTK [208]		+	
	U138MG [203, 266]	+	+	
	U373 [207]			+

HUMAN TISSUE (CANCER STEM CELLS)	CSC DESIGNATION	NUDE MICE	SCID MICE	NUDE RATS
Brain	BTSC83 [200]	+		
	LA-N-5 [231]	+		
	NGC-407-GFP [206]			+
	U87-SC [232]	+		
Breast	2LMP (MDA-MB-231 subclone) [234]		+	
	MCF-7 (CSC-like) [236]	+		
	MCF-7 (mammospheres) [235]	+		
	SUM159 [234]		+	
Lung	A549 [108]	+		
	H1299 [108]	+		
Ovarian	SKOV-3 (spherical cells) [213]	+		
Prostate	DU-145 (spheroid cells) [233]		+	

For access to a full listing and references* from peer-reviewed journals, please visit inotivco.com/onco

Evaluate our tumor growth rates by visiting our online library of *in vivo* tumor growth data at inotivco.com/tumor

* Superscript numbers correspond to publication references on the online cell line reference tool.

TO ORDER: refer to page 99

Tumor models and services.

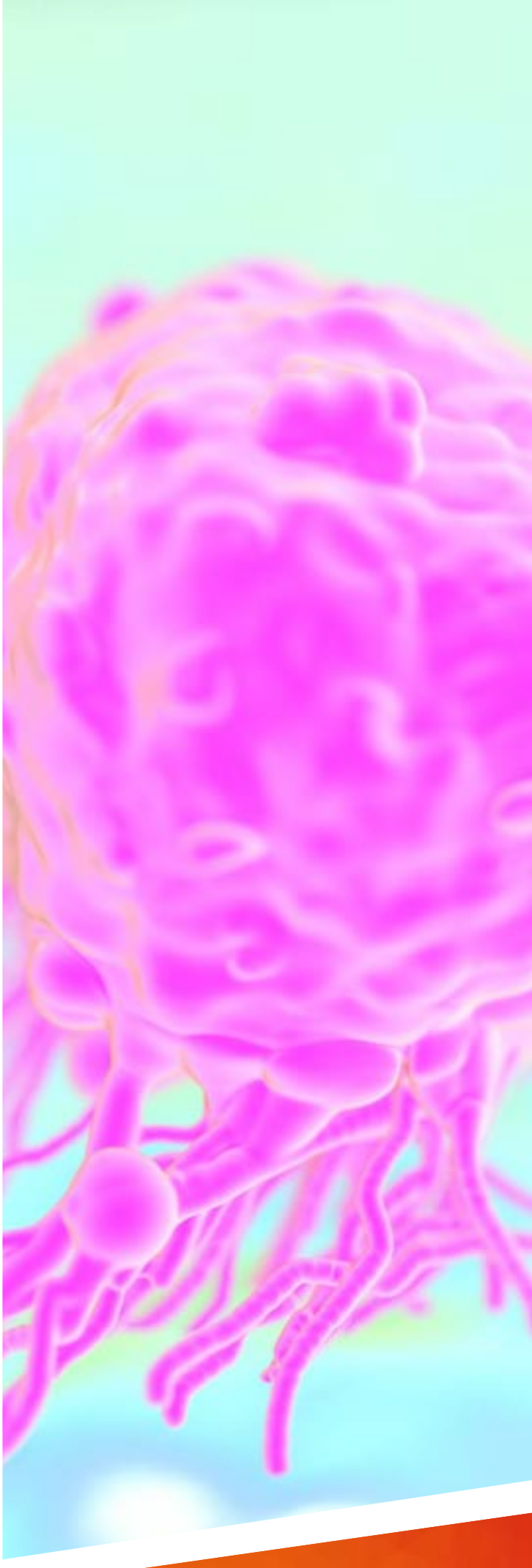
The requirement for accurate PDX models for preclinical efficacy studies has risen as personalized medicine becomes the approach for therapeutic solutions.

Inotiv offers a variety of tumor services:

EFFICACY TESTING BY INOTIV	• *In vivo* efficacy testing of PDX tumors • Downstream support of PK and PD analysis
UNGRAFTED PDX CELLS	• Viable, frozen PDX cells (5-10 M/vial) for propagation in mice or *ex-vivo* analysis
NON-VIABLE ANALYSIS MATERIALS	• Snap-frozen chunks • FFPE blocks • Tissue microarray (TMA)

Inotiv is the exclusive provider of Washington University Human in Mouse (WHIM) from Washington University in St. Louis, and Wistar Melanoma (WM) cells from the Wistar Institute. These highly regarded cells are well characterized, frequently published, and come with the technical support of Inotiv's experienced scientists. Propagate these tumors in-house or design a study for our scientists to execute at Inotiv. Additionally, we are able to provide tumor model services for cell-line derived xenograft (CDX) and syngeneic models..

For more information on our tumor models and services, please visit inotivco.com or contact us at RMSinfo@inotivco.com



TO ORDER: refer to page 99

MODEL CODES
069, 070

Athymic Nude

NOMENCLATURE: Hsd:Athymic Nude-*Foxn1*^{nu} (code 069)
NOMENCLATURE: Hsd:Athymic Nude-*Foxn1*^{nu}/*Foxn1*$^{+}$ (code 070)

PRICE PER ANIMAL

AGE (weeks)	*nu/nu*	*nu/+*
4	€ 61,90	€ 18,55
5	€ 68,85	€ 22,10
6	€ 77,55	€ 25,75
7	€ 85,05	€ 29,80
8	€ 92,95	€ 34,25
9	€ 101,00	€ 39,00
Over 9 weeks, add per week	€ 7,60	€ 5,15
Untimed pregnant female*	-	€ 313,10
Female with litter	-	€ 313,10
Proven breeder	-	P.O.R.
Retired breeder/Surplus	-	P.O.R.

* For our pregnancy policy, refer to page 99.

Albino. Derived from a nucleus colony obtained from the National Cancer Institute, Frederick, Maryland.

This immunodeficient model was originally thought to be a Balb/c congenic, but was later reported by NCI to be outbred.

CHARACTERISTICS

- The *nu* allele on chromosome 11 is an autosomal recessive mutation
- Dysfunctional rudimentary thymus
- Phenotypically hairless (sparse hair growth possible)
- T-cell deficient
- B-cells function normal
- No generation of cytotoxic effector cells
- No graft versus host response
- *Foxn1*^{nu}/*Foxn1*$^{+}$ heterozygotes do not show partial expression of the nu phenotype

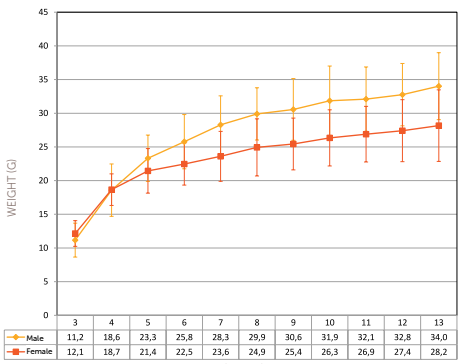
RESEARCH USE

- Oncology
- Transplantation
- Tumor cell growth
- Immunology
- Autoimmune disease
- Antibody production
- Sentinel model - heterozygous *Foxn1*^{nu}/*Foxn1*$^{+}$

ADDITIONAL AVAILABLE DATA

- Hematology
- Clinical chemistry
- Proven model with extensive references (see page 22)

Hsd:Athymic Nude-*Foxn1*^{nu}



	3	4	5	6	7	8	9	10	11	12	13
Male	11,2	18,6	23,3	25,8	28,3	29,9	30,6	31,9	32,1	32,8	34,0
Female	12,1	18,7	21,4	22,5	23,6	24,9	25,4	26,3	26,9	27,4	28,2

GROWTH CHART DATA SHOULD BE USED AS A GUIDELINE ONLY.
ANIMALS WERE BRED AND MAINTAINED ON TEKLAD GLOBAL 2919 DIET.

MODEL CODES
889, 890

NMRI Nude

NOMENCLATURE: HsdCpb:NMRI-*Foxn1*^{nu} (code 889)
NOMENCLATURE: HsdCpb:NMRI-*Foxn1*^{nu}/*Foxn1*$^{+}$ (code 890)

PRICE PER ANIMAL

AGE (weeks)	*nu/nu*	*nu/+*
4	€ 77,45	€ 44,50
5	€ 85,45	€ 47,85
6	€ 92,95	€ 53,40
7	€ 100,15	€ 57,90
8	€ 107,50	€ 63,10
9	€ 117,85	€ 69,80
Over 9 weeks, add per week	€ 5,90	€ 5,95
Female with litter	P.O.R.	€ 262,55
Proven breeder	P.O.R.	€ 87,35
Retired breeder/Surplus	P.O.R.	€ 44,55

Albino. Derived from a nucleus colony obtained from the Laboratory Animals Centre, Carshalton, UK. To TNO-CPB (now Inotiv) in 1972.

CHARACTERISTICS

- The *nu* allele on chromosome 11 is an autosomal recessive mutation
- Dysfunctional rudimentary thymus
- Phenotypically hairless (sparse hair growth possible)
- T-cell deficient
- B-cells function normal
- No generation of cytotoxic effector cells
- No graft versus host response
- *Foxn1*^{nu}/*Foxn1*$^{+}$ heterozygotes do not show partial expression of the nu phenotype

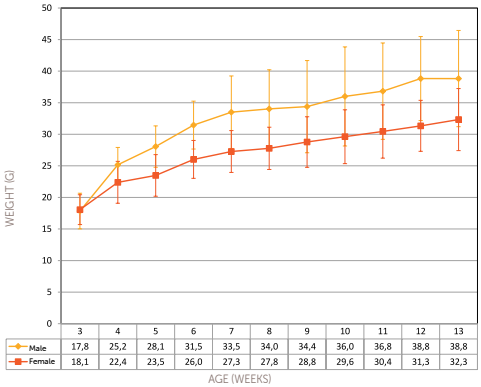
RESEARCH USE

- Oncology
- Transplantation
- Tumor cell growth
- Immunology
- Autoimmune disease
- Antibody production
- Sentinel model - heterozygous *Foxn1*^{nu}/*Foxn1*$^{+}$

ADDITIONAL AVAILABLE DATA

- Hematology
- Clinical chemistry
- Proven model with extensive references (see page 22)

HsdCpb:NMRI-*Foxn1*^{nu}



	3	4	5	6	7	8	9	10	11	12	13
Male	17,8	25,2	28,1	31,5	33,5	34,0	34,4	36,0	36,8	38,8	38,8
Female	18,1	22,4	23,5	26,0	27,3	27,8	28,8	29,6	30,4	31,3	32,3

GROWTH CHART DATA SHOULD BE USED AS A GUIDELINE ONLY.
ANIMALS WERE BRED AND MAINTAINED ON TEKLAD GLOBAL 2919 DIET.

TO ORDER: refer to page 99

MODEL CODES
165, 886

BALB/c Nude

NOMENCLATURE: BALB/cOlaHsd-*Foxn1*^{nu} (code 165)
NOMENCLATURE: BALB/cOlaHsd-*Foxn1*^{nu}/*Foxn1*$^{+}$ (code 886)

PRICE PER ANIMAL

AGE (weeks)	*nu/nu*	*nu/+*
4	€ 122,30	€ 29,05
5	€ 125,80	€ 34,50
6	€ 131,05	€ 40,30
7	€ 137,60	€ 46,65
8	€ 143,35	€ 54,25
9	€ 149,10	€ 63,00
Over 9 weeks, add per week	€ 6,75	€ 8,65
Female with litter	-	€ 487,80
Proven breeder	-	€ 115,55
Retired breeder/Surplus	-	€ 58,90

Albino. Institute of Animal Genetics, Edinburgh to Laboratory Animals Centre, Carshalton, to GD Searle, High Wycombe, to Olac (now Inotiv) in 1978.

CHARACTERISTICS

- The *nu* allele on chromosome 11 is an autosomal recessive mutation
- Dysfunctional rudimentary thymus
- Phenotypically hairless (sparse hair growth possible)
- T-cell deficient
- B-cells function normal
- No generation of cytotoxic effector cells
- No graft versus host response
- *Foxn1*^{nu}/*Foxn1*$^{+}$ heterozygotes do not show partial expression of the nu phenotype

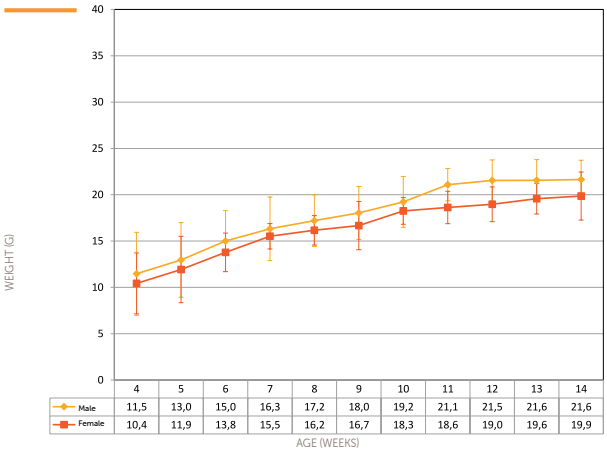
RESEARCH USE

- Oncology
- Transplantation
- Tumor cell growth
- Immunology
- Autoimmune disease
- Antibody production
- Sentinel model - heterozygous *Foxn1*^{nu}/*Foxn1*$^{+}$

ADDITIONAL AVAILABLE DATA

- Hematology
- Clinical chemistry
- Proven model with extensive references (see page 22)

BALB/cOlaHsd-*Foxn1*^{nu}



	4	5	6	7	8	9	10	11	12	13	14
Male	11,5	13,0	15,0	16,3	17,2	18,0	19,2	21,1	21,5	21,6	21,6
Female	10,4	11,9	13,8	15,5	16,2	16,7	18,3	18,6	19,0	19,6	19,9

GROWTH CHART DATA SHOULD BE USED AS A GUIDELINE ONLY.
ANIMALS WERE BRED AND MAINTAINED ON TEKLAD GLOBAL 2919 DIET.

TO ORDER: refer to page 99

MODEL CODES
883, 182

SCID

NOMENCLATURE: C.B-17/IcrHan®Hsd-*Prkdc*^{scid} (code 883)
NOMENCLATURE: C.B-17/IcrHsd-*Prkdc*^{scid} (code 182)

AGE (weeks)	PRICE PER ANIMAL
4	€ 91,20
5	€ 93,90
6	€ 97,80
7	€ 103,20
8	€ 107,90
9	€ 112,90
Over 9 weeks, add per week	€ 4,20

Albino. Harlan acquired from the Fox Chase Cancer Center, Philadelphia, Pennsylvania, in 1991. Harlan became Envigo in 2015, then Envigo was acquired by Inotiv in 2021.

Han® is a registered trademark of Inotiv.

CHARACTERISTICS

- Autosomal recessive, single nucleotide polymorphism within *Prkdc* gene on chromosome 16
- Severe combined immunodeficiency affecting T- and B-cell development
- Natural Killer (NK) cell, macrophage and granulocyte cell numbers and function are normal
- As SCID mice age, a variable percentage become "leaky" from the spontaneous development of functional T- and B-lymphocytes
- Highly susceptible to opportunistic viral and bacterial infection

RESEARCH USE

- Oncology
- Transplantation
- Tumor cell growth
- Immunology

ADDITIONAL AVAILABLE DATA

- Proven model with extensive references (see page 22)

MODEL CODE
186

SCID/Beige

NOMENCLATURE: C.B-17/IcrHsd-*Prkdc*^{scid} *Lyst*$^{bg-J}$

AGE (weeks)	PRICE PER ANIMAL
4	€ 107,45
5	€ 111,45
6	€ 115,90
7	€ 121,05
8	€ 124,95
9	€ 131,95
Over 9 weeks, add per week	€ 5,65

Albino. Harlan acquired from the Fox Chase Cancer Center, Philadelphia, Pennsylvania, in 1991. Harlan became Envigo in 2015, then Envigo was acquired by Inotiv in 2021.

CHARACTERISTICS

- Autosomal recessive, single nucleotide polymorphism within *Prkdc* gene on chromosome 16
- Autosomal recessive, *beige (bg-J)* mutation on chromosome 13
- Severe combined immunodeficiency affecting T- and B-cell development
- Severe lymphopenia
- Diminished Natural Killer (NK) cell activity relative to other SCID models
- Rudimentary thymus
- "Leaky" phenotype significantly suppressed relative to other SCID models
- Highly susceptible to opportunistic viral and bacterial infection

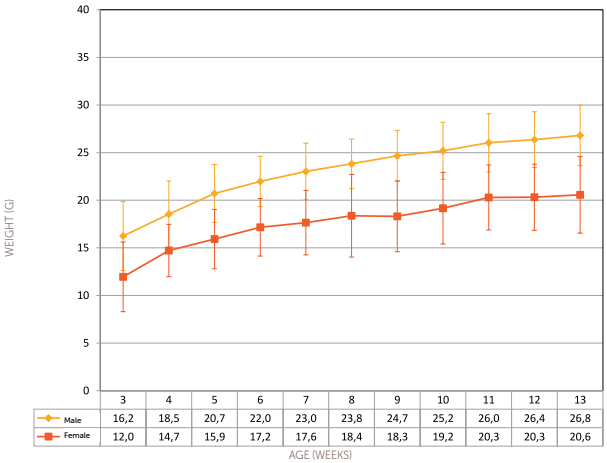
RESEARCH USE

- Oncology
- Teratology
- Transplantation
- Tumor cell growth
- Immunology

ADDITIONAL AVAILABLE DATA

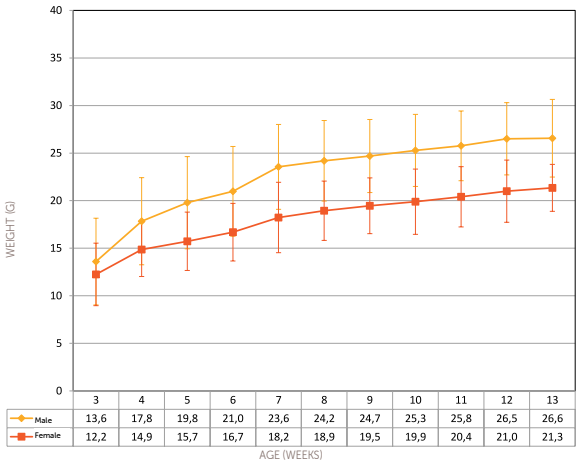
- Proven model with extensive references (see page 22)

C.B-17/IcrHan®Hsd-*Prkdc*^{scid}



GROWTH CHART DATA SHOULD BE USED AS A GUIDELINE ONLY.
ANIMALS WERE BRED AND MAINTAINED ON TEKLAD GLOBAL 2918 DIET.

C.B-17/IcrHsd-*Prkdc*^{scid} *Lyst*$^{bg-J}$



GROWTH CHART DATA SHOULD BE USED AS A GUIDELINE ONLY.
ANIMALS WERE BRED AND MAINTAINED ON TEKLAD GLOBAL 2918 DIET.

TO ORDER: refer to page 99

MODEL CODE
170

NOD.SCID

NOMENCLATURE: NOD.CB17-*Prkdc*^{scid}/NCrHsd

AGE (weeks)	PRICE PER ANIMAL
4	€ 129,45
5	€ 133,35
6	€ 137,50
7	€ 141,80
8	€ 147,00
9	€ 152,80
Over 9 weeks, add per week	€ 6,05

Albino. Received by National Cancer Institute, Frederick, Maryland in 2004 from National Institutes of Health, Bethesda, Maryland. Harlan Laboratories acquired from National Cancer Institute in 2006. Harlan became Envigo in 2015, then Envigo was acquired by Inotiv in 2021.

CHARACTERISTICS

- Autosomal recessive, single nucleotide polymorphism within *Prkdc* gene on chromosome 16
- Severe combined immunodeficiency affecting T- and B-cell development
- Natural Killer (NK) cell, macrophage and granulocyte cell numbers and function are reduced
- As SCID mice age, a variable percentage become "leaky" from the spontaneous development of functional T- and B-lymphocytes
- Highly susceptible to opportunistic viral and bacterial infection
- Development of autoimmune diabetes does not occur due to severe combined immunodeficiency
- Spontaneous thymic lymphomas

RESEARCH USE

- Oncology
- Transplantation
- Tumor cell growth
- Immunology

ADDITIONAL AVAILABLE DATA

- Hematology
- 12-week growth
- Proven models with extensive references (see page 22)

MODEL CODE
103

Albino C57BL/6

NOMENCLATURE: C57BL/6BrdCrHsd-*Tyr*^{c}

AGE (weeks)	PRICE PER ANIMAL
4	€ 54,65
5	€ 59,15
6	€ 64,85
7	€ 70,55
8	€ 76,95
9	€ 85,00
Over 9 weeks, add per week	€ 7,60

Albino. From Allan Bradley at Baylor College of Medicine to National Cancer Institute (NCI) in 2000; to Harlan Laboratories in 2008. Harlan became Envigo in 2015, then Envigo was acquired by Inotiv in 2021.

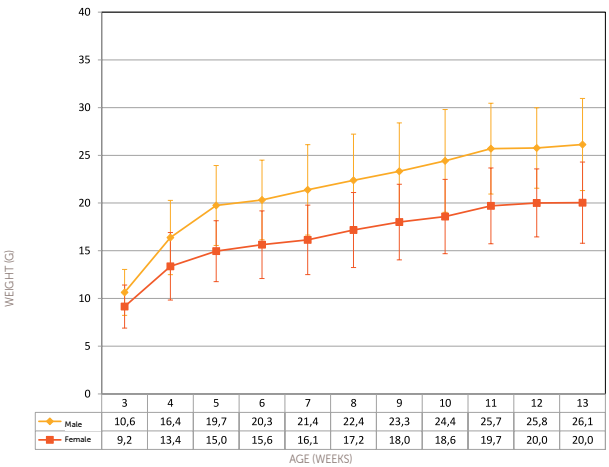
CHARACTERISTICS

- Contains a mutation in the c (*tyrosinase*) gene
- Litter average: 6.5
- Haplotype: *H-2*^{b}

RESEARCH USE

- Source of albino C57BL/6 embryos for chimera generation
- Ovarian transfer

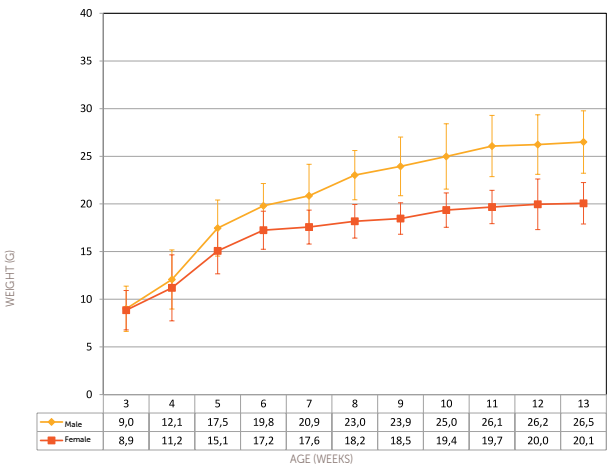
NOD.CB17-*Prkdc*^{scid}/NCrHsd



	3	4	5	6	7	8	9	10	11	12	13
Male	10,6	16,4	19,7	20,3	21,4	22,4	23,3	24,4	25,7	25,8	26,1
Female	9,2	13,4	15,0	15,6	16,1	17,2	18,0	18,6	19,7	20,0	20,0

GROWTH CHART DATA SHOULD BE USED AS A GUIDELINE ONLY.
ANIMALS WERE BRED AND MAINTAINED ON TEKLAD GLOBAL 2919 DIET.

C57BL/6BrdCrHsd-*Tyr*^{c}



	3	4	5	6	7	8	9	10	11	12	13
Male	9,0	12,1	17,5	19,8	20,9	23,0	23,9	25,0	26,1	26,2	26,5
Female	8,9	11,2	15,1	17,2	17,6	18,2	18,5	19,4	19,7	20,0	20,1

GROWTH CHART DATA SHOULD BE USED AS A GUIDELINE ONLY.
ANIMALS WERE BRED AND MAINTAINED ON TEKLAD GLOBAL 2918 DIET.

TO ORDER: refer to page 99

MODEL CODES
173, 174

Diabetic (db/db)

NOMENCLATURE: BKS.Cg- + *Lepr^{db}*/+ *Lepr^{db}* /OlaHsd (code 173)
NOMENCLATURE: BKS.Cg-(lean)/OlaHsd (code 174)

PRICE PER ANIMAL

AGE (weeks)	*db/db*	*lean**
5	€ 234,20	€ 105,70
6	€ 243,40	€ 112,70
7	€ 248,45	€ 119,95
8	€ 255,95	€ 126,70
9	€ 263,85	€ 136,40
Over 9 weeks, add per week	€ 10,55	€ 7,45
Female with litter	-	P.O.R.
Proven breeder	-	P.O.R.
Retired breeder/Surplus	-	P.O.R.

Black or misty. From Dunn Nutritional Laboratory, Cambridge, United Kingdom; to Olac, United Kingdom, in 1979; to Harlan, United States in 2000. Harlan became Envigo in 2015, then Envigo was acquired by Inotiv in 2021.

Additional Related Genotypes:

BKS.Cg-*Dock7^{m}* +/+ *Lepr^{db}*/OlaHsd (black, lean) (code H174)

BKS.Cg-*Dock7^{m}* +/*Dock7^{m}* +/OlaHsd (misty, lean) (code W174)

* Our breeding scheme maintains *m* and *Lepr^{db}* in repulsion. These genes are closely linked; however, recombination could occur. Our mice are most likely nonrecombinants, but they have not been tested.

Genetic testing (at additional cost) on demand.

CHARACTERISTICS

- *Lepr^{db}* is an autosomal recessive mutation on chromosome 4
- Obesity expressed around 4-5 weeks of age
- Elevation of plasma insulin demonstrated at 10-14 days
- Onset of hyperglycemia expressed at 4-8 weeks of age
- Polyphagia
- Proteinuria
- Glycosuria
- Polyuria/Polydipsia
- Hyperinsulinemia despite severe depletion of pancreatic islet
- Insulin-producing B-cells
- Leptin receptor deficient

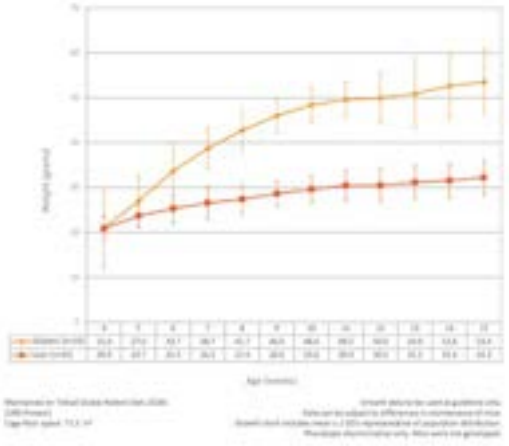
RESEARCH USE

- Diabetes, Type 2
- Peripheral neuropathy
- Myocardial disease
- Immunodeficiency
- Immunology
- Metabolism
- Obesity

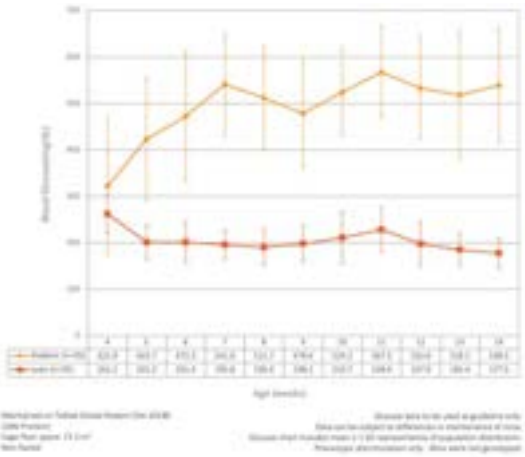
ADDITIONAL AVAILABLE DATA

- Hematology
- Clinical chemistry
- 12-week growth
- Glucose tolerance test

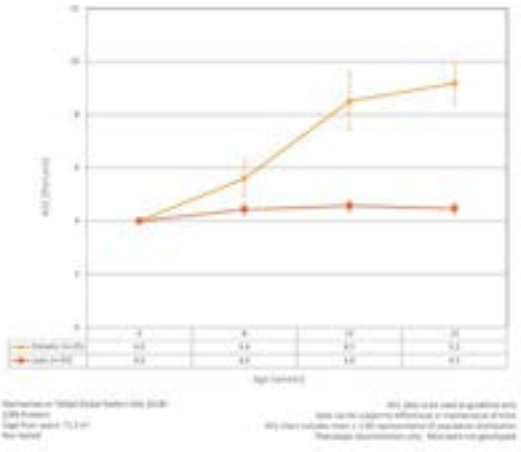
BKS.Cg- + *Lepr^{db}*/+ *Lepr^{db}*/OlaHsd (male)



BKS.Cg- + *Lepr^{db}*/+ *Lepr^{db}*/OlaHsd Blood Glucose (male)



BKS.Cg- + *Lepr^{db}*/+ *Lepr^{db}*/OlaHsd A1c (male)



TO ORDER: refer to page 99

MODEL CODE
021

Rag2/Il2rg double knockout (R2G2™)

NOMENCLATURE: B6;129-*Rag2*^{tm1Fwa}*Il2rg*^{tm1Rsky}/DwlHsd

White-bellied, light chinchilla (light tan). The R2G2™ model is a double knockout mouse with an ultra immunodeficient phenotype. The model was created by backcrossing the *IL2RG* (common gamma chain) mutation on to a mixed background mouse (C57BL/6 and 129 mix) with a mutation in Rag2. The recombination activating gene 2 (*Rag2*) interruption causes a deficiency in T and B cells. The Common gamma chain gene (*IL2RG*) interruption results in a lack of functional receptors for IL-2, IL-4, IL-7, IL-9 and IL-15. Envigo acquired the model from Fox Chase Cancer Center in 2016, where the model had been maintained since 2005. Envigo was acquired by Inotiv in 2021.

CHARACTERISTICS

- Recombination activating gene 2 (*Rag2*) knocked out
- Common gamma chain gene (*Il2rg*) knocked out
- Lacks functional receptors for IL-2, IL-4, IL-7, IL-9 and IL-15
- Severe lymphocyte development impairment
- Deficient in T cells
- Deficient in B cells
- Lacks NK cells
- Decreased macrophage cells
- Decreased dendritic cells
- Decreased neutrophils

RESEARCH USE

- Oncology research
- Cancer cell transplantation
- Immunology
- Infectious disease

FEATURES AND ADVANTAGES

- **Severe Immunodeficiency** → Ultra immunodeficient phenotype enhances tumor cell acceptance
- **Less radiosensitive** → Higher tolerance for radiation as compared to models with the scid mutation
- **Reduced leakiness** → Decreased leakiness as compared to SCID models

ADDITIONAL AVAILABLE DATA

- Hematology
- Flow cytometry data
- Tumor growth chart
- Radiation sensitivity
- Chemotherapy tolerability
- Estrogen supplement tolerability

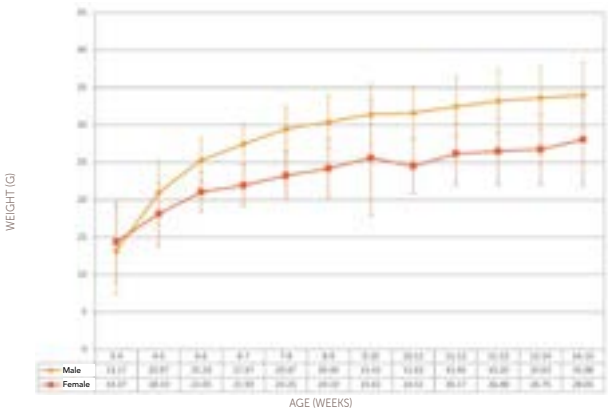
Academic pricing

AGE (weeks)	PRICE PER ANIMAL
4	€ 118,60
5	€ 118,60
6	€ 118,60
7	€ 118,60
8	€ 118,60
9	€ 118,60
Over 9 weeks, add per week	€ 7,25

Commercial pricing

AGE (weeks)	PRICE PER ANIMAL
4	€ 152,90
5	€ 162,90
6	€ 174,20
7	€ 182,45
8	€ 189,50
9	€ 196,65
Over 9 weeks, add per week	€ 7,10

B6;129-*Rag2*^{tm1Fwa}*Il2rg*^{tm1Rsky}/DwlHsd



GROWTH CHART DATA SHOULD BE USED AS A GUIDELINE ONLY.
ANIMALS WERE BRED AND MAINTAINED ON TEKLAD GLOBAL 2018S DIET.

TO ORDER: refer to page 99

MODEL CODE
126

B-NDG knockout mouse

NOMENCLATURE: NOD.CB17-*Prkdc*^{scid} *IL2rg*^{tm1}/BcgenHsd

Albino. The B-NDG model is a single knockout mouse with an ultra-immunodeficient phenotype. The model was generated by Biocytogen by deleting the *IL2rg* gene from NOD.scid mice. *Prkdc* (protein kinase DNA-activated catalytic) null scid mutation is characterized by significantly deficient of functional T cells and B cells. The common gamma chain gene (IL2RG) deletion results in the lack of functional NK cells. Envigo licensed the mouse model from Biocytogen in 2019, where the model had been maintained. Envigo was acquired by Inotiv in 2021.

CHARACTERISTICS

- Common gamma chain gene (Il2rg) interrupted
- Lacks functional receptors for IL-2, IL-4, IL-7, IL-9, IL-15, and IL-21
- Autosomal recessive, single nucleotide polymorphism with Prkdc gene on chromosome 16
- Severe lymphocyte development impairment
- Deficient in T cells
- Deficient in B cells
- Lacks NK cells
- Deficiency in cytokine signaling
- High humanization capability

RESEARCH USE

- Oncology research
- Cancer cell transplantation
- Immunology
- Infectious disease
- Humanization applications

FEATURES AND ADVANTAGES

- **Severe Immunodeficiency** → Ultra immunodeficient phenotype enhances tumor cell acceptance
- **High humanization capability** → Minimal rejection of human-derived cells and tissue

ADDITIONAL AVAILABLE DATA

- Hematology
- Flow cytometry data
- Tumor growth charts
- PDX model data
- Humanization data

For more information on model development and characterization updates, visit **inotivco.com/bndg**

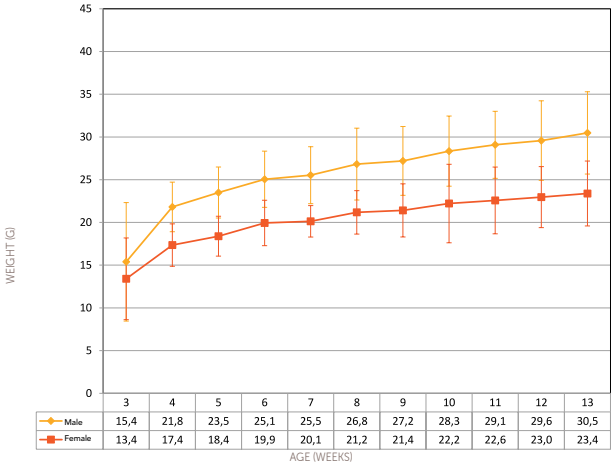
Academic pricing

AGE (weeks)	PRICE PER ANIMAL
4	€ 143,60
5	€ 143,60
6	€ 148,05
7	€ 155,80
8	€ 163,60
9	€ 171,40
Over 9 weeks, add per week	€ 7,80

Commercial pricing

AGE (weeks)	PRICE PER ANIMAL
4	€ 171,40
5	€ 171,40
6	€ 179,80
7	€ 187,55
8	€ 195,35
9	€ 203,15
Over 9 weeks, add per week	€ 8,35

NOD.CB17-*Prkdc*^{scid} *IL2rg*^{tm1}/BcgenHsd



	3	4	5	6	7	8	9	10	11	12	13
Male	15,4	21,8	23,5	25,1	25,5	26,8	27,2	28,3	29,1	29,6	30,5
Female	13,4	17,4	18,4	19,9	20,1	21,2	21,4	22,2	22,6	23,0	23,4

GROWTH CHART DATA SHOULD BE USED AS A GUIDELINE ONLY.
ANIMALS WERE BRED AND MAINTAINED ON TEKLAD GLOBAL 2018S DIET.

TO ORDER: refer to page 99

MODEL CODE
405

B-NDG B2m knockout plus mouse

NOMENCLATURE: *Prkdc^{scid}Il2rg^{tm1}B2m^{tm1}Fcgrt$^{tm1(B2m)}$/BcgenHsd*

Albino. The B-NDG B2m model is a knockout mouse with an ultra-immunodeficient phenotype. The model was generated by Biocytogen by deleting the *IL2rg* gene from NOD.scid mice. *Prkdc* (protein kinase DNA-activated catalytic) null *scid* mutation is characterized by significantly deficient of functional T cells and B cells. The Common gamma chain gene (IL2RG) deletion results in the lack of functional NK cells. The B2m gene is fused in the FcRn gene while the endogenous murine B2m gene is knocked out. This mouse combines the B-NDG mouse background with the absence of the MHC class I molecule β2m and shows no difference in the metabolism of IgG drugs in mice compared with wild-type mice. This model is effective against GVHD effects. Envigo licensed the mouse model from Biocytogen in 2021, where the model had been maintained. Envigo was acquired by Inotiv in 2021.

CHARACTERISTICS

- Common gamma chain gene (Il2rg) interrupted
- Lacks functional receptors for IL-2, IL-4, IL-7, IL-9, IL-15, and IL-21
- Autosomal recessive, single nucleotide polymorphism with *Prkdc* gene on chromosome 16
- Severe lymphocyte development impairment
- Deficient in T cells
- Deficient in B cells
- Lacks NK cells
- MHC class I deficiency
- Deficiency in cytokine signaling
- High humanization capability

RESEARCH USE

- Oncology research
- Cancer cell transplantation
- Immunology
- Infectious disease
- Graft vs. host disease research
- Humanization applications

FEATURES AND ADVANTAGES

- **Severe Immunodeficiency** → Ultra immunodeficient phenotype enhances tumor cell acceptance
- **High humanization capability** → Minimal rejection of human-derived cells and tissue
- **Increased survival and decreased GvHD** → Significant extension of survival & remarked delay of onset and reduction of severity of GvHD in human PBMC engrafted B2M/FcRn mice
- **Antibody half-life** → Improved antibody half-life compared with B2m KO mice

ADDITIONAL AVAILABLE DATA

- Hematology
- Flow cytometry data
- Tumor growth charts
- PDX model data
- Humanization data

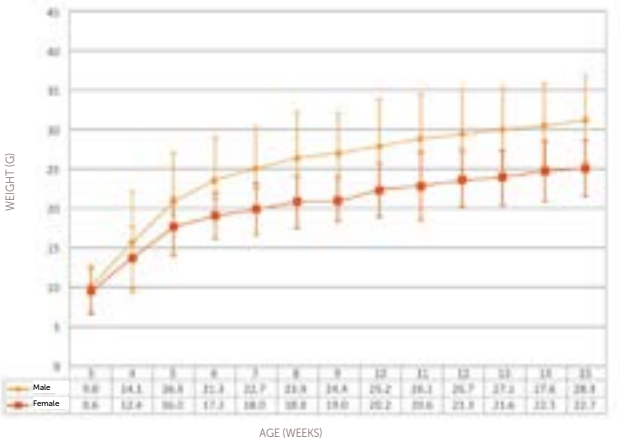
Academic pricing

AGE (weeks)	PRICE PER ANIMAL	
	MALE	FEMALE
4	€ 207,75	€ 223,65
5	€ 214,10	€ 230,00
6	€ 220,50	€ 236,40
7	€ 226,85	€ 242,75
8	€ 233,20	€ 249,10
9	€ 239,55	€ 255,45
Over 9 weeks, add per week	€ 7,40	€ 7,40

Commercial pricing

AGE (weeks)	PRICE PER ANIMAL	
	MALE	FEMALE
4	€ 323,30	€ 355,10
5	€ 323,30	€ 355,10
6	€ 330,70	€ 362,50
7	€ 338,15	€ 369,95
8	€ 345,55	€ 377,35
9	€ 353,00	€ 384,80
Over 9 weeks, add per week	€ 7,95	€ 7,95

Prkdc^{scid}Il2rg^{tm1}B2m^{tm1}Fcgrt$^{tm1(B2m)}$/BcgenHsd



GROWTH CHART DATA SHOULD BE USED AS A GUIDELINE ONLY.
ANIMALS WERE BRED AND MAINTAINED ON TEKLAD GLOBAL 2018S DIET.

TO ORDER: refer to page 99

MODEL CODE
406

B-NDG hIL15 mouse

NOMENCLATURE: *Prkdc*^{scid}*Il2rg*^{tm1}*Il15*$^{tm1(IL15)}$/BcgenHsd

Albino. The B-NDG hIL15 model is a single knockout mouse with an ultra-immunodeficient phenotype. The model was generated by Biocytogen by deleting the *IL2rg* gene from NOD.scid mice. *Prkdc* (protein kinase DNA-activated catalytic) null *scid* mutation is characterized by significantly deficient of functional T cells and B cells. The Common gamma chain gene (IL2RG) deletion results in the lack of functional NK cells. The human IL15 gene was inserted after the 5'UTR of the mouse IL15, so that this mouse expresses the human IL15 cytokine. This mouse combines a B-NDG mouse background and expresses human IL15 cytokine. It will become a suitable animal model to investigate development and function of human NK cells. Envigo licensed the mouse model from Biocytogen in 2021, where the model had been maintained. Envigo was acquired by Inotiv in 2021.

CHARACTERISTICS

- Common gamma chain gene (Il2rg) interrupted
- Lacks functional receptors for IL-2, IL-4, IL-7, IL-9, IL-15, and IL-21
- Autosomal recessive, single nucleotide polymorphism with *Prkdc* gene on chromosome 16
- Severe lymphocyte development impairment
- Deficient in T cells
- Deficient in B cells
- Lacks NK cells
- Deficiency in cytokine signaling
- High humanization capability

RESEARCH USE

- Oncology research
- Cancer cell transplantation
- Immunology
- Infectious disease
- NK cell role in tumorigenesis
- Antibody drug efficacy evaluation
- Humanization applications

FEATURES AND ADVANTAGES

- **Severe Immunodeficiency** → Ultra immunodeficient phenotype enhances tumor cell acceptance
- **Reduced leakiness** → Decreased leakiness as compared to SCID models
- **High humanization capability** → Minimal rejection of human-derived cells and tissue
- **Expresses human IL15 cytokine** → Ability to investigate the development and function of human NK cells

ADDITIONAL AVAILABLE DATA

- Hematology
- Flow cytometry data
- Tumor growth charts
- PDX model data
- Humanization data

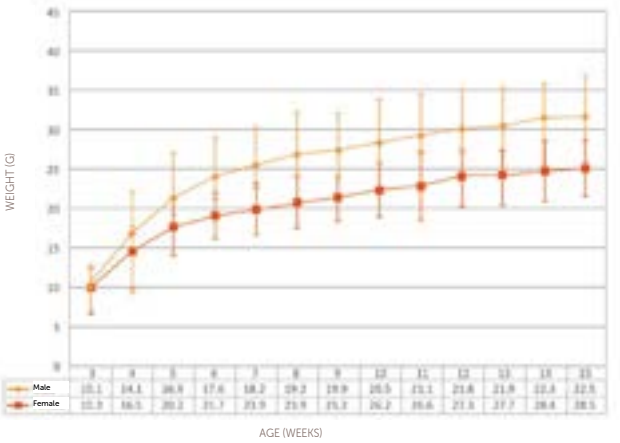
Academic pricing

AGE (weeks)	PRICE PER ANIMAL	
	MALE	FEMALE
4	€ 213,05	€ 223,65
5	€ 219,40	€ 230,00
6	€ 225,80	€ 236,40
7	€ 232,15	€ 242,75
8	€ 238,50	€ 249,10
9	€ 244,85	€ 255,45
Over 9 weeks, add per week	€ 7,40	€ 7,40

Commercial pricing

AGE (weeks)	PRICE PER ANIMAL	
	MALE	FEMALE
4	€ 333,90	€ 376,30
5	€ 333,90	€ 376,30
6	€ 341,30	€ 383,70
7	€ 348,75	€ 391,15
8	€ 356,15	€ 398,55
9	€ 363,60	€ 406,00
Over 9 weeks, add per week	€ 7,95	€ 7,95

Prkdc^{scid}*Il2rg*^{tm1}*Il15*$^{tm1(IL15)}$/BcgenHsd



GROWTH CHART DATA SHOULD BE USED AS A GUIDELINE ONLY.
ANIMALS WERE BRED AND MAINTAINED ON TEKLAD GLOBAL 2018S DIET.

TO ORDER: refer to page 99

MODEL CODE
946

B6C3F1

NOMENCLATURE: B6C3F1/OlaHsd

AGE (weeks)	PRICE PER ANIMAL
3	€ 29,70
4	€ 32,60
5	€ 35,65
6	€ 39,50
7	€ 42,80
8	€ 47,30
9	€ 51,50
Over 9 weeks, add per week	€ 4,95
Untimed pregnant female*	€ 243,10
Time mated female*	€ 331,60
Female with litter	€ 302,20

* For our pregnancy policy, refer to page 99.

Agouti. Offspring of a cross between the C57BL/6JOlaHsd inbred female and the C3H/HeNHsd inbred male.

MODEL CODE
344

B6D2F1

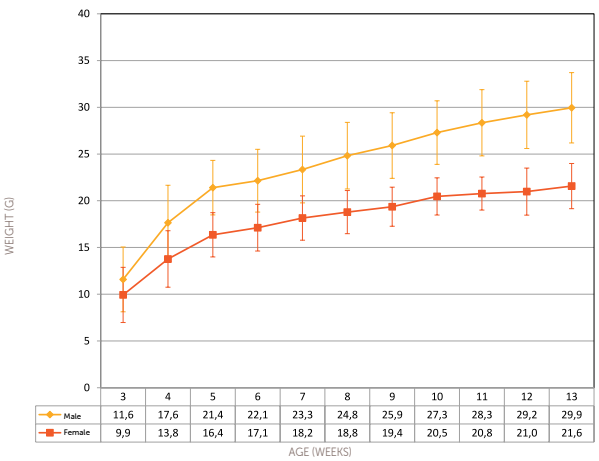
NOMENCLATURE: B6D2F1/JRccHsd

AGE (weeks)	PRICE PER ANIMAL
3	€ 17,60
4	€ 18,90
5	€ 20,05
6	€ 22,20
7	€ 24,55
8	€ 27,05
9	€ 29,80
Over 9 weeks, add per week	€ 3,00
Untimed pregnant female*	€ 100,10
Time mated female*	€ 153,80
Female with litter	€ 137,50

* For our pregnancy policy, refer to page 99.

Black. The B6D2F1/JRccHsd mice are offspring from a cross between the C57BL/6JRccHsd inbred female and the DBA/2JRccHsd inbred male.

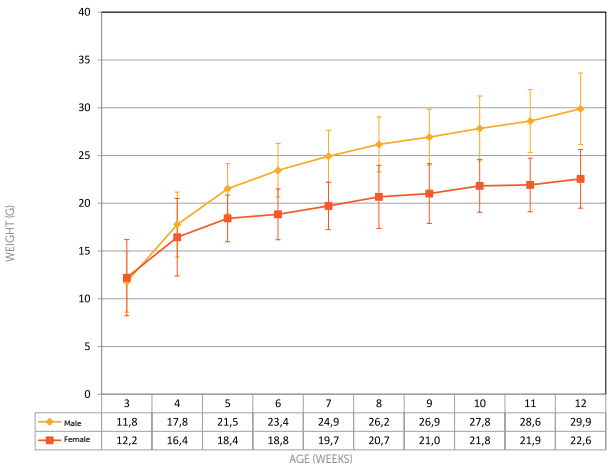
B6C3F1/OlaHsd



	3	4	5	6	7	8	9	10	11	12	13
Male	11,6	17,6	21,4	22,1	23,3	24,8	25,9	27,3	28,3	29,2	29,9
Female	9,9	13,8	16,4	17,1	18,2	18,8	19,4	20,5	20,8	21,0	21,6

GROWTH CHART DATA SHOULD BE USED AS A GUIDELINE ONLY.
ANIMALS WERE BRED AND MAINTAINED ON TEKLAD GLOBAL 2018S DIET.

B6D2F1/JRccHsd



	3	4	5	6	7	8	9	10	11	12
Male	11,8	17,8	21,5	23,4	24,9	26,2	26,9	27,8	28,6	29,9
Female	12,2	16,4	18,4	18,8	19,7	20,7	21,0	21,8	21,9	22,6

GROWTH CHART DATA SHOULD BE USED AS A GUIDELINE ONLY.
ANIMALS WERE BRED AND MAINTAINED ON TEKLAD GLOBAL 2018S DIET.

TO ORDER: refer to page 99

MODEL CODE
045

B6CBAF1

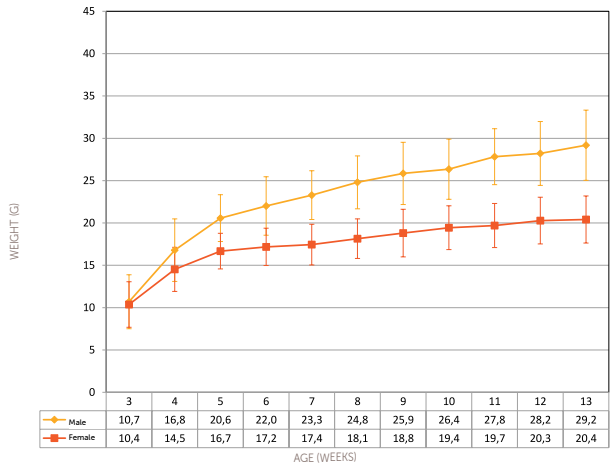
NOMENCLATURE: B6CBAF1/OlaHsd

AGE (weeks)	PRICE PER ANIMAL
3	€ 28,90
4	€ 32,85
5	€ 35,85
6	€ 40,65
7	€ 44,35
8	€ 47,95
9	€ 52,45
Over 9 weeks, add per week	€ 4,50
Untimed pregnant female*	€ 244,95
Time mated female*	€ 316,60
Female with litter	€ 294,10

* For our pregnancy policy, refer to page 99.

Agouti. Offspring of a cross between the C57BL/6JOlaHsd inbred female and the CBA/CaOlaHsd inbred male.

B6CBAF1/OlaHsd



	3	4	5	6	7	8	9	10	11	12	13
Male	10,7	16,8	20,6	22,0	23,3	24,8	25,9	26,4	27,8	28,2	29,2
Female	10,4	14,5	16,7	17,2	17,4	18,1	18,8	19,4	19,7	20,3	20,4

GROWTH CHART DATA SHOULD BE USED AS A GUIDELINE ONLY.
ANIMALS WERE BRED AND MAINTAINED ON TEKLAD GLOBAL 2018S DIET.

MODEL CODE
949

CB6F1

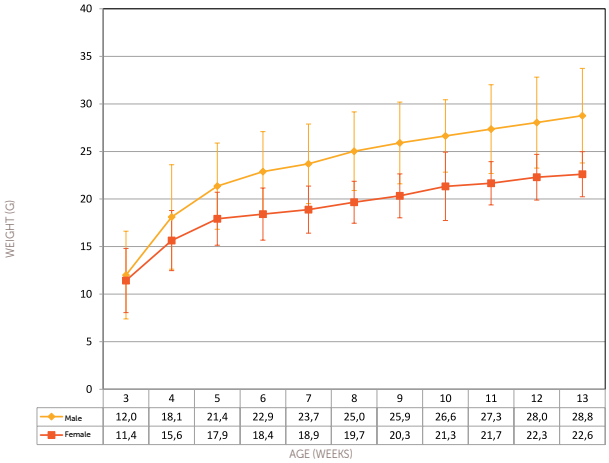
NOMENCLATURE: CB6F1/OlaHsd

AGE (weeks)	PRICE PER ANIMAL
3	€ 24,85
4	€ 28,40
5	€ 31,80
6	€ 35,45
7	€ 38,95
8	€ 42,75
9	€ 46,45
Over 9 weeks, add per week	€ 6,45
Untimed pregnant female*	€ 212,55
Time mated female*	€ 292,00
Female with litter	€ 279,65

* For our pregnancy policy, refer to page 99.

Agouti. Offspring of a cross between the BALB/cOlaHsd inbred female and the C57BL/6JOlaHsd inbred male.

CB6F1/OlaHsd



	3	4	5	6	7	8	9	10	11	12	13
Male	12,0	18,1	21,4	22,9	23,7	25,0	25,9	26,6	27,3	28,0	28,8
Female	11,4	15,6	17,9	18,4	18,9	19,7	20,3	21,3	21,7	22,3	22,6

GROWTH CHART DATA SHOULD BE USED AS A GUIDELINE ONLY.
ANIMALS WERE BRED AND MAINTAINED ON TEKLAD GLOBAL 2018S DIET.

Additional strains of F1 hybrid mice

STOCK	AGE (weeks)	PRICE PER ANIMAL
CD2F1/Hsd (code 060)	3	€ 43,20
Over 3 weeks, add per week		€ 11,20

This is a brief selection of hybrid mice; any combination can be bred on demand.

For the same reason, any existing hybrid combination can be discontinued at any time without prior notice.

TO ORDER: refer to page 99

MODEL CODE
492

Humanized ACE2 (hACE2) knockin mouse

NOMENCLATURE: C57BL/6Hsd-*Ace2*$^{em1(ACE2)Env}$

Angiotensin-converting enzyme 2 (ACE2) is a key enzyme in the renin-angiotensin system (RAS). RAS regulates blood volume and arterial tone, as such, ACE2 is a common target for the treatment of hypertension. ACE2 is highly expressed in several human tissues including the gastrointestinal tract, liver, gallbladder, kidney, urinary bladder, testes, placenta and fallopian tube, with lower expression levels in the lungs and pancreas. It also serves as the primary receptor for cell entry for the SARS-CoV and SARS-CoV-2 viruses. Binding of the coronavirus spike (S) protein to ACE2 initiates fusion of the cell and viral membranes for cell entry. ACE2-S protein binding is the critical initial step for coronavirus infection and is being investigated as a potential coronavirus drug target.

This hACE2 knockin mouse model was generated by integrating a codon optimized human *ACE2* cDNA expression cassette into the mouse *Ace2* gene through CRISPR-based technology. As a result, the mouse *Ace2* gene promoter and other regulatory elements drive expression of the human ACE2 protein while terminating mouse *Ace2* gene expression, making this a useful rodent model for studying SARS-CoV-2 and COVID-19.

CHARACTERISTICS

- Human *ACE2* expression was confirmed by measuring mRNA levels in heterozygous and homozygous females and hemizygous males.
- Background strain: C57BL/6

RESEARCH USE

- Infectious disease
- COVID-19
- SARS

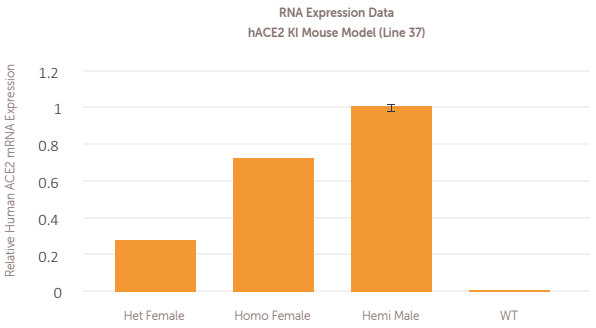
Academic pricing

AGE (weeks)	PRICE PER ANIMAL MALE	FEMALE
4-12	€ 100,70	€ 100,70
Over 12 weeks, add per week	€ 7,40	€ 7,40

Commercial pricing

AGE (weeks)	PRICE PER ANIMAL MALE	FEMALE
4-12	€ 227,90	€ 227,90
Over 12 weeks, add per week	€ 7,95	€ 7,95

C57BL/6Hsd-*Ace2*$^{em1(ACE2)Env}$



Relative human *ACE2* expression in a heterozygous (Het) female, homozygous (Homo) female, and hemizygous (Hemi) male hACE2 knockin mouse, or a C57BL/6 wild type (WT) animal.

TO ORDER: refer to page 99

MODEL CODE
494

Humanized Tmprss2 (hTmprss2) knockin mouse

NOMENCLATURE: C57BL/6Hsd-*Tmprss2*$^{em1(TMPRSS2)Env}$

Tmprss2 is a transmembrane serine protease that is involved in viral infection. Both influenza viruses and human coronaviruses, including HCoV-229E, MERS-CoV, SARS-CoV, and SARS-CoV-2, depend on Tmprss2 proteolytically cleaving (i.e., priming) the viral spike glycoprotein, which triggers fusion of the viral envelope and host cell membrane, allowing the virus to enter the cell. Tmprss2 also has a pivotal role in the development and progression of prostate cancer. The fusion of the *TMPRSS2* gene with the *ERG* oncogene is the most frequent genomic alteration in prostate cancer.

The hTmprss2 KI mouse model was generated using CRISPR-based technology to mediate the integration of a codon optimized human *TMPRSS2* cDNA expression cassette into the mouse Tmprss2 gene locus. As a result, the mouse *Tmprss2* gene promoter and other regulatory elements will drive the human Tmprss2 protein expression whereas the mouse *Tmprss2* gene expression will be terminated.

CHARACTERISTICS

- Background strain: C57BL/6

RESEARCH USE

- Infectious disease
- COVID-19
- SARS & MERS

Academic pricing

AGE (weeks)	PRICE PER ANIMAL MALE	FEMALE
4-12	€ 100,70	€ 100,70
Over 12 weeks, add per week	€ 7,40	€ 7,40

Commercial pricing

AGE (weeks)	PRICE PER ANIMAL MALE	FEMALE
4-12	€ 227,90	€ 227,90
Over 12 weeks, add per week	€ 7,95	€ 7,95

TO ORDER: refer to page 99

MODEL CODE
495

Humanized ACE2/Tmprss2 (hACE2/hTmprss2) double knockin mouse

NOMENCLATURE: C57BL/6Hsd-*Ace2*$^{em1(ACE2)Env}$ *Tmprss2*$^{em1(TMPRSS2)Env}$

Cellular infection by coronaviruses, including SARS-CoV and SARS-CoV-2, is a two-step process that utilizes the host proteins ACE2 and Tmprss2. Angiotensinconverting enzyme 2 (ACE2), a key enzyme in the renin-angiotensin system that regulates blood volume and arterial tone, is the entry receptor for SARS-CoV and SARS-CoV-2. The S1 subunit of the coronavirus spike (S) protein contains a receptor binding domain (RBD) that recognizes and binds to ACE2. Upon receptor binding, Tmprss2, a transmembrane serine protease, cleaves the S protein at the junction of the S1 and S2 subunits, allowing fusion of the cellular and viral membranes and the subsequent entry of the coronavirus into the cell. As such, ACE2 and Tmprss2 are being investigated as potential targets for anti-viral drugs.

The hACE2 and hTmprss2 single knockin models were generated by integrating a codon optimized human *ACE2* or *TMPRSS2* cDNA expression cassette into the respective mouse gene through CRISPR-based technology. This results in the mouse gene promoter and other regulatory elements driving the expression of the human ACE2 or Tmprss2 protein while terminating expression of the respective mouse gene. The hACE2/hTmprss2 double knockin mouse was created through the crossing of the hACE2 and hTmprss2 single knockin mouse models.

CHARACTERISTICS

- Background strain: C57BL/6

RESEARCH USE

- Infectious disease
- COVID-19
- SARS

Academic pricing

PRICE PER ANIMAL

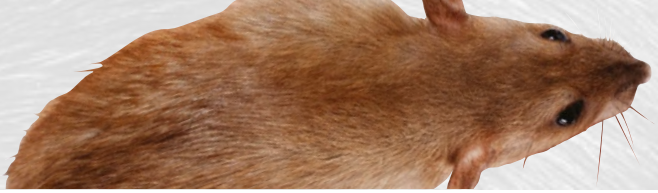
AGE (weeks)	MALE	FEMALE
4-12	€ 196,10	€ 196,10
Over 12 weeks, add per week	€ 7,40	€ 7,40

Commercial pricing

PRICE PER ANIMAL

AGE (weeks)	MALE	FEMALE
4-12	€ 275,60	€ 275,60
Over 12 weeks, add per week	€ 7,95	€ 7,95

TO ORDER: refer to page 99



MODEL CODE
147

Brown Norway

NOMENCLATURE: BN/RijHsd

PRICE PER ANIMAL

WEIGHT (g)	MALE	FEMALE
35-49	€ 56,30	€ 56,30
50-74	€ 63,50	€ 65,30
75-99	€ 70,10	€ 74,00
100-124	€ 75,10	€ 85,50
125-149	€ 80,75	€ 96,10
150-174	€ 88,25	€ 108,15
175-199	€ 95,75	€ 122,95
200-224	€ 103,15	-
225-249	€ 109,55	-
250-274	€ 119,35	-
275-299	€ 128,65	-
Over 12 weeks, add per week	€ 8,25	€ 8,15
Untimed pregnant female*	-	€ 370,30
Time mated female*	-	€ 453,15
Female with litter	-	€ 439,80
Proven breeder	€ 185,15	€ 185,15
Retired breeder/Surplus	€ 68,85	€ 68,85

* For our pregnancy policy, refer to page 99.

Brown, non-agouti. BN/RijHsd rats were derived from a nucleus colony obtained directly from the TNO Institute, the Netherlands.

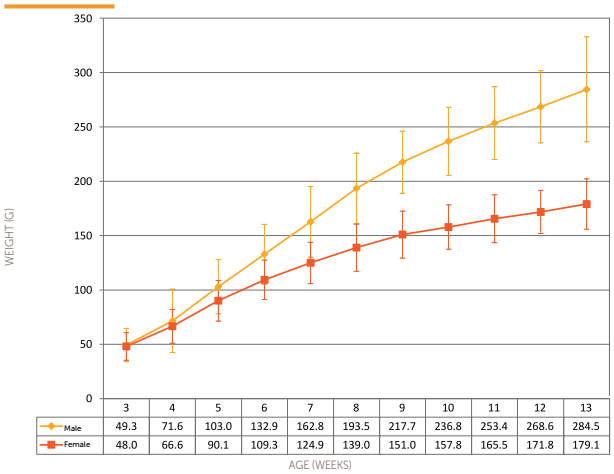
CHARACTERISTICS

- Litter average: 4.5
- Haplotype: *RT1*^{n}
- Hyper-responsive lungs
- High incidence of bladder tumors in males

RESEARCH USE

- Allergic respiratory disease
- Oncology
- Aging
- Leukemia
- Nephrology

BN/RijHsd



GROWTH CHART DATA SHOULD BE USED AS A GUIDELINE ONLY.
ANIMALS WERE BRED AND MAINTAINED ON TEKLAD GLOBAL 2018S DIET.

MODEL CODE
092

Dark Agouti

NOMENCLATURE: DA/OlaHsd

PRICE PER ANIMAL

WEIGHT (g)	MALE	FEMALE
35-49	€ 41,20	€ 41,20
50-74	€ 45,20	€ 46,85
75-99	€ 50,10	€ 54,35
100-124	€ 54,90	€ 64,15
125-149	€ 60,85	€ 72,75
150-174	€ 68,00	€ 83,90
175-199	€ 74,55	€ 97,40
200-224	€ 80,75	-
225-249	€ 87,75	-
250-274	€ 95,50	-
275-299	€ 103,05	-
Over 12 weeks, add per week	€ 8,10	€ 8,10
Untimed pregnant female*	-	€ 252,60
Time mated female*	-	€ 304,05
Female with litter	-	€ 292,05
Proven breeder	€ 103,10	€ 103,10
Retired breeder/Surplus	€ 41,35	€ 41,35

* For our pregnancy policy, refer to page 99.

Agouti. From A.R.C. Cambridge, United Kingdom; to Olac, United Kingdom, in 1979; to Harlan Laboratories, in 1992. Harlan became Envigo in 2015, then Envigo was acquired by Inotiv in 2021.

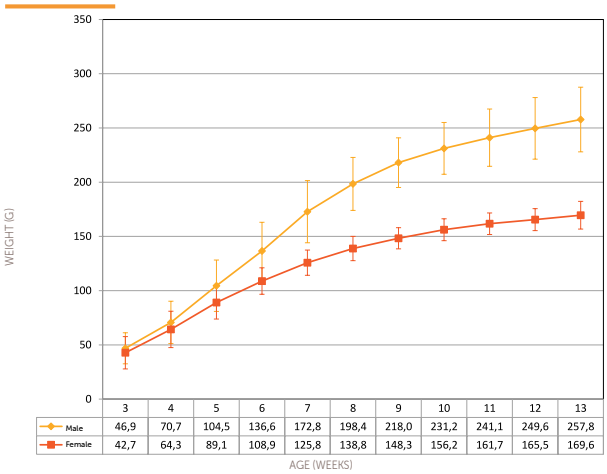
CHARACTERISTICS

- Litter Average: 6.0
- Haplotype: *RT1*^{av1}
- Females have a defective bile acid transport

RESEARCH USE

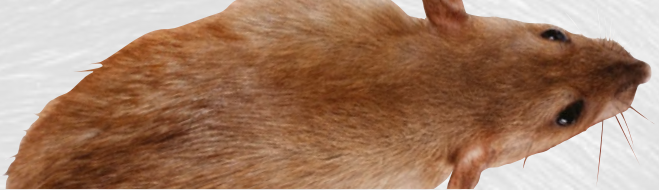
- Experimental allergic encephalomyelitis
- Induced rheumatoid arthritis
- Oncology
- Cardiovascular
- Transplantation

DA/OlaHsd



GROWTH CHART DATA SHOULD BE USED AS A GUIDELINE ONLY.
ANIMALS WERE BRED AND MAINTAINED ON TEKLAD GLOBAL 2018S DIET.

TO ORDER: refer to page 99



MODEL CODE
010

Fischer 344

NOMENCLATURE: F344/NHsd

PRICE PER ANIMAL

WEIGHT (g)	MALE	FEMALE
35-49	€ 51,55	€ 51,55
50-74	€ 51,75	€ 56,65
75-99	€ 59,90	€ 69,65
100-124	€ 71,60	€ 77,95
125-149	€ 78,55	€ 94,55
150-174	€ 88,35	€ 122,30
175-199	€ 94,15	€ 154,40
200-224	€ 110,15	-
225-249	€ 118,35	-
250-274	€ 126,60	-
275-299	€ 126,60	-
Over 12 weeks, add per week	€ 9,55	€ 9,55
Untimed pregnant female*	-	P.O.R.
Time mated female*	-	P.O.R.
Female with litter	-	P.O.R.
Proven breeder	-	P.O.R.
Retired breeder/Surplus	-	P.O.R.

* For our pregnancy policy, refer to page 99.

Albino. F344/NHsd; Descended from a nucleus colony obtained from the National Institutes of Health, Bethesda, Maryland.

CHARACTERISTICS

- Litter Average: 7.5
- Haplotype: *RT1*^{lv1}
- Hydrocephalic resistant

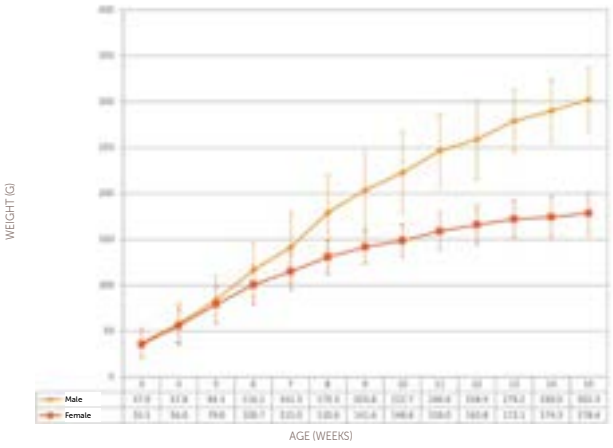
ADDITIONAL AVAILABLE DATA

- Hematology
- Clinical chemistry
- Two-year growth

RESEARCH USE

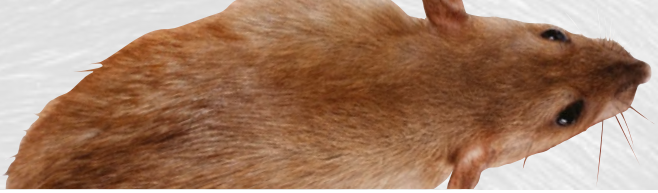
- Experimental allergic encephalomyelitis
- Carcinogenicity
- Oncology
- Toxicology
- Aging
- Ophthalmology
- Autoimmunity
- General purpose

F344/NHsd



GROWTH CHART DATA SHOULD BE USED AS A GUIDELINE ONLY.
ANIMALS WERE BRED AND MAINTAINED ON TEKLAD GLOBAL 2018S DIET.

TO ORDER: refer to page 99



MODEL CODES
861, 017

Lewis

NOMENCLATURE: LEW/Han®Hsd (code 861)
NOMENCLATURE: LEW/SsNHsd (code 017)

PRICE PER ANIMAL

WEIGHT (g)	MALE	FEMALE
35-49	€ 38,90	€ 39,95
50-74	€ 46,00	€ 48,95
75-99	€ 52,20	€ 58,15
100-124	€ 58,05	€ 66,85
125-149	€ 65,50	€ 78,45
150-174	€ 73,30	€ 88,40
175-199	€ 80,25	€ 102,15
200-224	€ 87,45	-
225-249	€ 94,65	-
250-274	€ 103,25	-
275-299	€ 110,70	-
Over 12 weeks, add per week	€ 8,65	€ 8,15
Untimed pregnant female*	-	€ 383,60
Time mated female*	-	€ 538,25
Female with litter	-	€ 484,10
Proven breeder	€ 110,05	€ 113,10
Retired breeder/Surplus	€ 51,25	€ 52,90

* For our pregnancy policy, refer to page 99.

Albino. LEW/Han®Hsd rats were descended from the Central Institute for Laboratory Animal Breeding (ZfV), Hannover, Germany. In 1994 to Harlan through acquisition. LEW/SsNHsd rats were descended from a nucleus colony obtained from the National Institutes of Health, Bethesda, Maryland USA. Harlan became Envigo in 2015, then Envigo was acquired by Inotiv in 2021.

Han® is a registered trademark of Inotiv.

CHARACTERISTICS

- Litter average: 7.5
- Docile disposition
- Haplotype: *RT1*^{l}
- Inbred recipient for several congenic strains
- Increased levels of serum thyroxine, insulin, and growth hormone
- Susceptible to induction of autoimmune disease

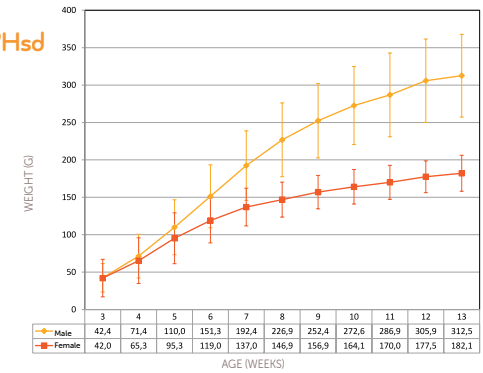
RESEARCH USE

- Adjuvant-induced arthritis
- Experimental allergic encephalomyelitis
- Transplantation

ADDITIONAL AVAILABLE DATA

- Clinical chemistry

LEW/Han®Hsd



	3	4	5	6	7	8	9	10	11	12	13
Male	42,4	71,4	110,0	151,3	192,4	226,9	252,4	272,6	286,9	305,9	312,5
Female	42,0	65,3	95,3	119,0	137,0	146,9	156,9	164,1	170,0	177,5	182,1

GROWTH CHART DATA SHOULD BE USED AS A GUIDELINE ONLY.
ANIMALS WERE BRED AND MAINTAINED ON TEKLAD GLOBAL 2018S DIET.

MODEL CODE
022

Spontaneously Hypertensive

NOMENCLATURE: SHR/NHsd

AGE (weeks)	PRICE PER ANIMAL
3	€ 203,50
4	€ 220,05
5	€ 238,50
6	€ 268,65
7	€ 294,40
8	€ 319,95
9	€ 344,90
10	€ 369,05
11	€ 401,20
12	€ 438,10
13	€ 467,65
14	€ 509,60
Over 14 weeks, add per week	€ 37,10
Untimed pregnant female*	€ 1.344,05
Time mated female*	€ 1.422,00
Female with litter	€ 1.827,05
Proven breeder	€ 578,75
Retired breeder/Surplus	€ 335,50

* For our pregnancy policy, refer to page 99.

Albino. Derived from a nucleus colony obtained from the National Institutes of Health, Bethesda, Maryland.

CHARACTERISTICS

- Litter average: 9.4
- Haplotype: *RT1*^{k}

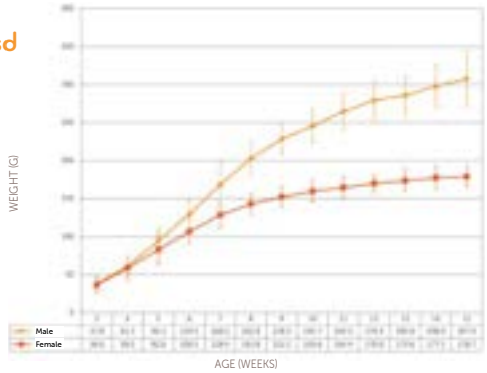
RESEARCH USE

- Model for Hypertension and Insulin Resistance

ADDITIONAL AVAILABLE DATA

- To maintain the phenotype of SHR/NHsd rats, Inotiv routinely screens future breeders utilizing the tail cuff method for acceptable blood pressure levels. On request we can monitor individual rats prior to shipment (at additional cost).

SHR/NHsd



GROWTH CHART DATA SHOULD BE USED AS A GUIDELINE ONLY.
ANIMALS WERE BRED AND MAINTAINED ON TEKLAD GLOBAL 2018S DIET.

TO ORDER: refer to page 99

MODEL CODE
023

Wistar Kyoto

NOMENCLATURE: WKY/NHsd

AGE (weeks)	PRICE PER ANIMAL
3	€ 60,20
4	€ 64,60
5	€ 70,95
6	€ 79,15
7	€ 86,00
8	€ 94,90
9	€ 104,80
10	€ 116,90
11	€ 130,10
12	€ 143,40
13	€ 156,60
14	€ 169,75
Over 14 weeks, add per week	€ 13,90
Untimed pregnant female*	€ 308,15
Time mated female*	€ 350,00
Female with litter	€ 365,60
Proven breeder	€ 123,05
Retired breeder/Surplus	€ 49,10

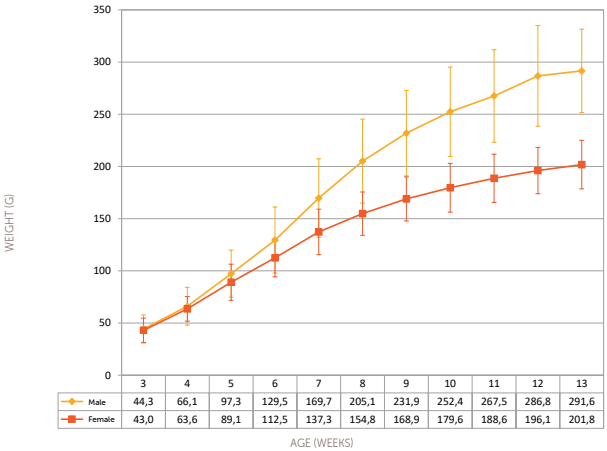
* For our pregnancy policy, refer to page 99.

Albino. Derived from a nucleus colony obtained from the National Institutes of Health, Bethesda, Maryland.

CHARACTERISTICS

- Litter average: 8.4
- Haplotype: *RT1*^{k}
- Normotensive control for SHR Model

WKY/NHsd



GROWTH CHART DATA SHOULD BE USED AS A GUIDELINE ONLY.
ANIMALS WERE BRED AND MAINTAINED ON TEKLAD GLOBAL 2018S DIET.

TO ORDER: refer to page 99

MODEL CODE
168

Wistar Han®

NOMENCLATURE: RccHan®:WIST

PRICE PER ANIMAL

WEIGHT (g)	MALE	FEMALE
35-49	€ 13,05	€ 13,05
50-74	€ 14,85	€ 14,85
75-99	€ 17,55	€ 17,60
100-124	€ 19,20	€ 19,65
125-149	€ 21,75	€ 22,15
150-174	€ 23,90	€ 24,50
175-199	€ 26,45	€ 27,70
200-224	€ 28,85	-
225-249	€ 30,70	-
250-274	€ 32,75	-
275-299	€ 35,65	-
300-324	€ 39,70	-
325-349	€ 42,70	-
Over 12 weeks, add per week	€ 3,30	€ 3,30
Untimed pregnant female*	-	€ 139,60
Time mated female*	-	€ 184,30
Female with litter	-	€ 193,45
Proven breeder	€ 46,70	€ 46,70
Retired breeder/Surplus	€ 23,65	€ 23,65

* For our pregnancy policy, refer to page 99.

Albino. Derived at Biological Research Laboratories Limited (BRL), formerly RCC, now Harlan Laboratories Ltd., Füllinsdorf, Switzerland from original colony at Zentralinstitute für Versuchstierzucht, Hannover in 1989. Transferred to Harlan Sprague-Dawley, Inc. in 1993 (now Inotiv).

In 2004 Inotiv acquired RCC Ltd. and new breeding stock was transferred in 2008 (nomenclature RccHan®:WIST). Unlike competitive models, the RccHan®:WIST rat has been maintained from the original nucleus of 156 breeding pairs in Hannover, Germany.

Han® is a registered trademark of Inotiv.

CHARACTERISTICS

- Litter average: 9.5
- Docile disposition

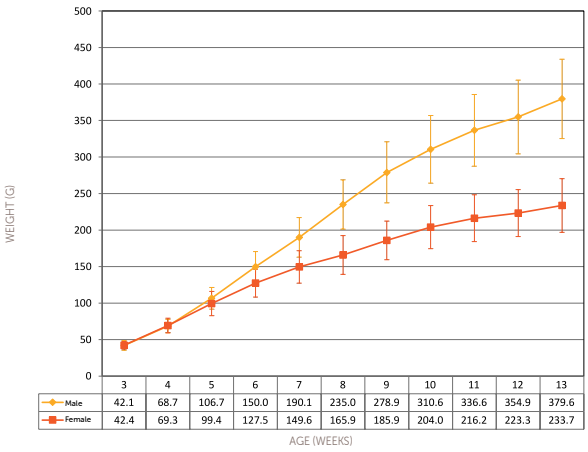
ADDITIONAL AVAILABLE DATA

- Hematology
- Clinical chemistry

RESEARCH USE

- Toxicology
- Oncology
- Teratology
- Aging
- General purpose

RccHan®:WIST



	3	4	5	6	7	8	9	10	11	12	13
Male	42.1	68.7	106.7	150.0	190.1	235.0	278.9	310.6	336.6	354.9	379.6
Female	42.4	69.3	99.4	127.5	149.6	165.9	185.9	204.0	216.2	223.3	233.7

GROWTH CHART DATA SHOULD BE USED AS A GUIDELINE ONLY.
ANIMALS WERE BRED AND MAINTAINED ON TEKLAD GLOBAL 2018S DIET.

25 years of stable control data at **inotivco.com/toxicology**

ACUTE TO ONCOGENICITY STUDIES – 3, 6, 12, AND 24 MONTHS

- Survival rates
- Growth
- Food and water consumption
- Clinical observations
- Functional observation battery
- Ophthalmoscopy
- Clinical pathology
- P450 enzymes
- Gross lesions and organ weights
- Bone marrow differentiation
- Incidence and images of spontaneous neoplastic and non-neoplastic changes
- Reproductive and developmental data

TO ORDER: refer to page 99

Key advantages

REDUCED BODY SIZE

- Reduced compound use
- More efficient housing
- Reduced food consumption
- Diet restriction not required

INCREASED LONGEVITY COMPARED WITH THE CRL:CD(SD)

- Ensures study completion with confidence
- Fewer animals required to start the study, meeting the 3Rs

REDUCED TUMOR INCIDENCE

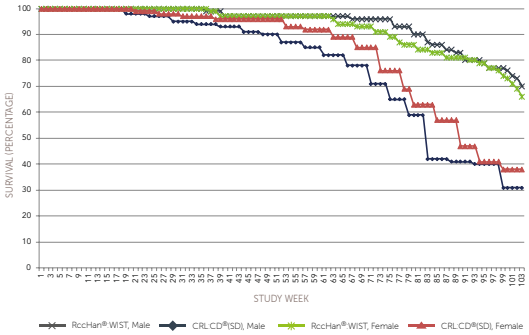
- Fewer background tumors

LATEST 103-WEEK DATA AVAILABLE

- Growth and survival
- Food consumption
- Clinical observations

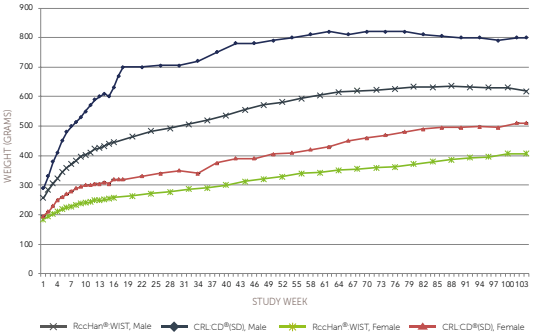
RccHan®:WIST 103-week survival curve

Comparing Wistar Han® and CRL:CD®(SD) survival data



RccHan®:WIST 103-week growth curve

Growth curve for Wistar Han® and CRL:CD® rats



For all available data, go to
inotivco.com/toxicology

TO ORDER: refer to page 99

MODEL CODE
002

Sprague Dawley®

NOMENCLATURE: Hsd:Sprague Dawley® SD®

Albino. Originated by the Sprague-Dawley Company in 1925 through a series of crosses begun with a single-hooded male and six albino females of unknown origin. Current Inotiv colonies are direct descendants of this original colony.

SD® is a registered trademark of Inotiv.

CHARACTERISTICS

- Most widely used outbred rat in animal research
- Litter average: 11.0
- Docile disposition
- Excellent reproductive performance and maternal characteristics

RESEARCH USE

- Toxicology
- Aging
- Teratology
- Oncology
- Nutrition
- Diet-induced Obesity
- General purpose

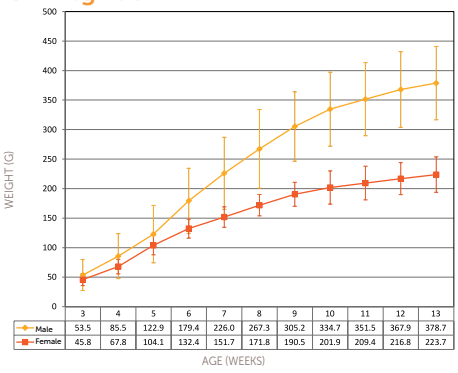
Learn more about our surgical services.
See page 90.

PRICE PER ANIMAL

WEIGHT (g)	MALE	FEMALE
35-49	€ 14,95	€ 14,95
50-74	€ 16,05	€ 16,30
75-99	€ 18,35	€ 18,90
100-124	€ 19,95	€ 21,10
125-149	€ 21,95	€ 23,60
150-174	€ 24,15	€ 25,70
175-199	€ 26,50	€ 28,65
200-224	€ 28,90	€ 31,85
225-249	€ 31,55	-
250-274	€ 33,90	-
275-299	€ 37,10	-
300-324	€ 40,30	-
325-349	€ 43,20	-
Over 10 weeks, add per week	€ 3,20	€ 2,85
Untimed pregnant female*	-	€ 182,35
Time mated female*	-	€ 213,85
Female with litter	-	€ 206,65
Proven breeder	€ 64,35	€ 65,25
Retired breeder/Surplus	€ 23,45	€ 24,80

* For our pregnancy policy, refer to page 99.

Hsd:Sprague Dawley® SD®



	3	4	5	6	7	8	9	10	11	12	13
Male	53.5	85.5	122.9	179.4	226.0	267.3	305.2	334.7	351.5	367.9	378.7
Female	45.8	67.8	104.1	132.4	151.7	171.8	190.5	201.9	209.4	216.8	223.7

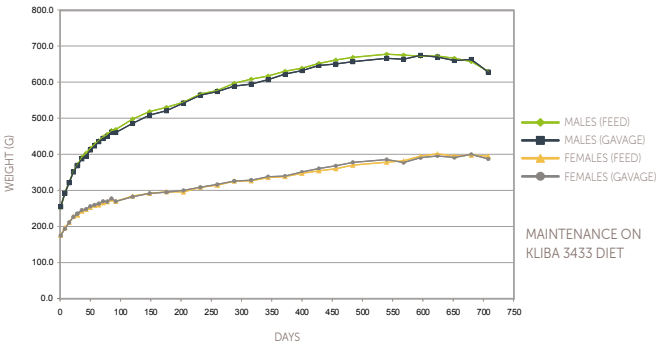
GROWTH CHART DATA SHOULD BE USED AS A GUIDELINE ONLY.
ANIMALS WERE BRED AND MAINTAINED ON TEKLAD GLOBAL 2018S DIET.

104-WEEK DATA AVAILABLE GO TO INOTIVCO.COM/SDTOX TO FIND:

- Protocol Summary
- Growth Curve
- Survival Rates
- Complete Blood Count
- Organ Weights
- Serum Chemistry
- Neoplastic and Non-neoplastic Lesions

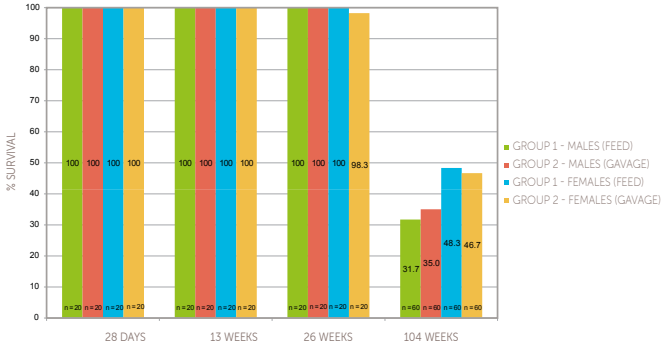
Aging available for SD rats

Hsd:Sprague Dawley® (SD®) 104 week growth curve study C11963



GROWTH DATA TO BE USED AS A GUIDELINE ONLY AND IS SUBJECT TO DIFFERENCES IN MAINTENANCE OF RATS. GROWTH CHART INCLUDES MEAN REPRESENTATIVE POPULATION DISTRIBUTION.

Hsd:Sprague Dawley®SD® Survival rate study c11963



TO ORDER: refer to page 99

MODEL CODE
119

Lister Hooded

NOMENCLATURE: HsdOla:LH

PRICE PER ANIMAL

WEIGHT (g)	MALE	FEMALE
35-49	€ 24,80	€ 26,60
50-74	€ 27,00	€ 28,80
75-99	€ 28,90	€ 31,45
100-124	€ 31,95	€ 35,10
125-149	€ 35,05	€ 39,10
150-174	€ 38,45	€ 43,30
175-199	€ 42,00	€ 47,60
200-224	€ 45,65	€ 52,25
225-249	€ 48,95	-
250-274	€ 52,50	-
275-299	€ 55,75	-
300-324	€ 60,05	-
325-349	€ 63,95	-
Untimed pregnant female*	-	€ 221,65
Time mated female*	-	€ 254,45
Female with litter	-	€ 226,65
Proven breeder	€ 73,10	€ 77,20
Retired breeder/Surplus	€ 27,95	€ 29,25

* For our pregnancy policy, refer to page 99.

Black-hooded. From ICI, Alderley Edge in 1932 to Medical Research Council, Mill Hill, UK. In 1969 to Olac (now Inotiv).

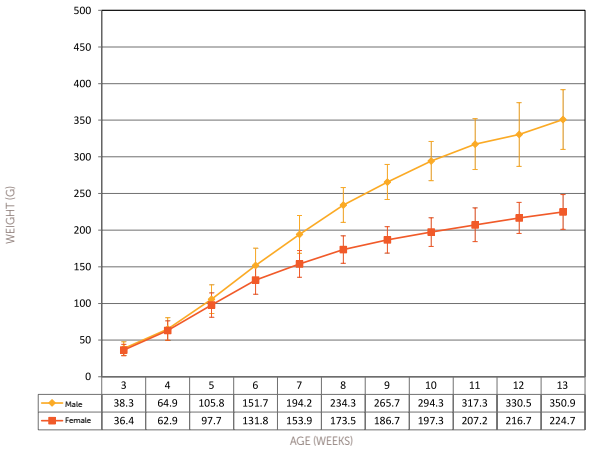
CHARACTERISTICS

- Litter Average: 10.0
- Disposition: Docile
- Slow growth rate

RESEARCH USE

- Behavioral Studies

HsdOla:LH



	3	4	5	6	7	8	9	10	11	12	13
Male	38.3	64.9	105.8	151.7	194.2	234.3	265.7	294.3	317.3	330.5	350.9
Female	36.4	62.9	97.7	131.8	153.9	173.5	186.7	197.3	207.2	216.7	224.7

GROWTH CHART DATA SHOULD BE USED AS A GUIDELINE ONLY.
ANIMALS WERE BRED AND MAINTAINED ON TEKLAD GLOBAL 2018S DIET.

TO ORDER: refer to page 99

MODEL CODE
140

Long Evans

NOMENCLATURE: HsdBlu:LE

PRICE PER ANIMAL

WEIGHT (g)	MALE	FEMALE
35-49	€ 31,05	€ 31,80
50-74	€ 36,25	€ 39,60
75-99	€ 43,95	€ 46,40
100-124	€ 49,25	€ 51,60
125-149	€ 53,75	€ 56,35
150-174	€ 58,30	€ 65,10
175-199	€ 63,40	€ 69,55
200-224	€ 68,85	€ 76,60
225-249	€ 77,90	-
250-274	€ 84,10	-
275-299	€ 89,15	-
300-324	€ 94,30	-
325-349	€ 104,85	-
Untimed pregnant female*	-	€ 356,65
Time mated female*	-	€ 435,55
Female with litter	-	€ 469,60
Proven breeder	€ 166,40	€ 185,75
Retired breeder/Surplus	€ 110,25	€ 105,40

* For our pregnancy policy, refer to page 99.

Black-hooded. From the University of Rochester, Rochester, New York; to Blue Spruce Farms, Altamont, New York, in 1964; to Harlan through acquisition in 1988. Harlan became Envigo in 2015, then Envigo was acquired by Inotiv in 2021.

CHARACTERISTICS

- Individual housing of males recommended
- Good maternal characteristics

RESEARCH USE

- Diet-induced obesity
- Nutrition
- Behavior

MODEL CODES
005, 006

Athymic Nude

NOMENCLATURE: Hsd:RH-*Foxn1*^{rnu} (code 005)
NOMENCLATURE: Hsd:RH-*Foxn1*^{rnu}/*Foxn1*$^{+}$ (code 006)

PRICE PER ANIMAL

AGE (weeks)	*rnu/rnu*	*rnu/+*
3	€ 130,70	€ 97,00
4	€ 153,85	€ 133,55
5	€ 179,00	€ 172,50
6	€ 211,70	€ 210,40
7	€ 240,20	€ 245,20
8	€ 267,40	€ 282,85
9	€ 294,95	€ 317,35
Over 9 weeks, add per week	€ 25,35	€ 26,40
Untimed pregnant female*	-	€ 661,35
Female with litter	-	€ 863,30
Proven breeder	-	P.O.R.
Retired breeder/Surplus	-	P.O.R.

* For our pregnancy policy, refer to page 99.

Hooded (pigmented). Derived from animals obtained from the Rowett Research Institute, Aberdeen, Scotland.

CHARACTERISTICS

- The *rnu* allele on chromosome 10 is an autosomal recessive mutation associated with hairlessness and thymic aplasia
- The thymus-dependent lymph node areas are depleted of lymphocytes (T-cells)
- Phenotypically hairless (sparse hair growth possible)
- Rudimentary thymic tissue
- Increased Natural Killer (NK) cell population
- *Foxn1*^{rnu}/*Foxn1*$^{+}$ heterozygotes do not show partial expression of rnu phenotype

RESEARCH USE

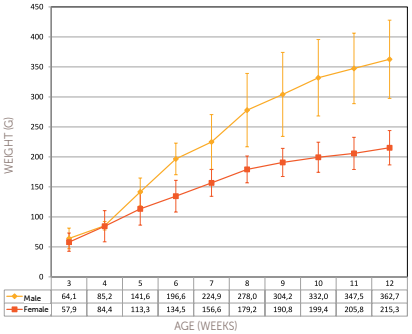
- Oncology (see page 22)
- Immunology
- Xenograft and allograft transplantation

Visit us at **inotivco.com/oncology** for our full portfolio of oncology products and services or ask for our oncology brochure.

Additional stocks of outbred rats

STOCK	AGE (weeks)	PRICE PER ANIMAL
Hsd:WI (code 001)	3	€ 32,85
Over 3 weeks, add per week		€ 4,95

Hsd:RH-*Foxn1*^{rnu}



GROWTH CHART DATA SHOULD BE USED AS A GUIDELINE ONLY. ANIMALS WERE BRED AND MAINTAINED ON TEKLAD GLOBAL 2919 DIET.

TO ORDER: refer to page 99

MODEL CODES
194, 195

Zucker

NOMENCLATURE: HsdHlr:ZUCKER-*Lepr^{fa}*/*Lepr^{fa}* (code 194)
NOMENCLATURE: HsdHlr:ZUCKER-(lean) (code 195)

PRICE PER ANIMAL

AGE (weeks)	*fa/fa*	*lean**
5	€ 410,20	€ 108,35
6	€ 432,50	€ 120,50
7	€ 464,50	€ 134,45
8	€ 489,90	€ 148,20
9	€ 514,40	€ 155,10
Over 9 weeks, add per week	€ 35,85	€ 20,05
Female with litter	-	P.O.R.
Proven breeder	-	P.O.R.
Retired breeder/Surplus	-	P.O.R.

Black, brown, brown/white, black/white. Derived from a colony obtained in 1992 from Hoffmann-la-Roche, Nutley, New Jersey.

Additional related genotypes:
HsdHlr:ZUCKER-*Lepr^{fa}*/*Lepr^{+}* (code H195)
HsdHlr:ZUCKER-*Lepr^{+}*/*Lepr^{+}* (code W195)

* Genetic testing (at additional cost) is required to determine *Lepr^{fa}*/*Lepr^{+}* or *Lepr^{+}*/*Lepr^{+}* genotype.

CHARACTERISTICS

- *Lepr^{fa}*/*Lepr^{+}* heterozygotes do not show partial expression of *fa* phenotype
- *fa* is an autosomal recessive mutation on chromosome 5
- Exhibit obesity at 4 to 5 weeks of age
- Animals have not been selectively bred to induce hyperglycemia
- Insulin-resistant
- Adipocyte hypertrophy and hyperplasia
- Hyperphagia
- Muscle atrophy
- Hyperlipemic
- Hypercholesterolemia
- Hyperinsulinemia

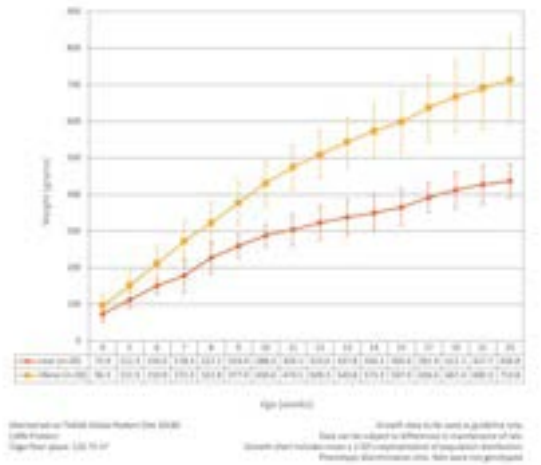
RESEARCH USE

- Genetic obesity
- Diabetes, Type 2

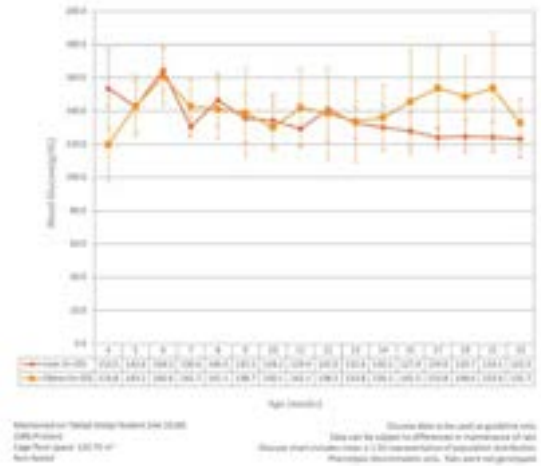
ADDITIONAL AVAILABLE DATA

- Hematology
- Clinical chemistry
- 12-week growth

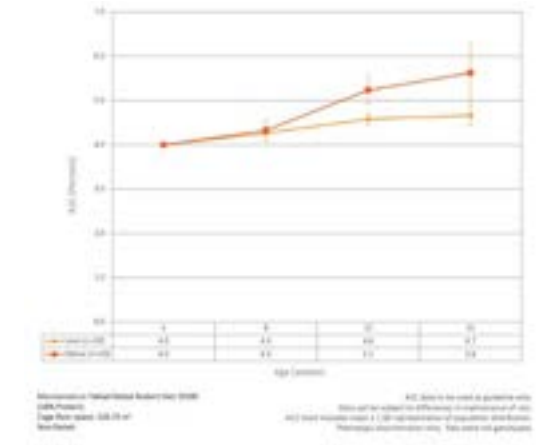
ZUCKER-*Lepr^{fa}* (male)



ZUCKER-*Lepr^{fa}* Blood Glucose (male)



ZUCKER-*Lepr^{fa}* A1c (male)



TO ORDER: refer to page 99

MODEL CODE
372

Pink1 knockout rat - Park6

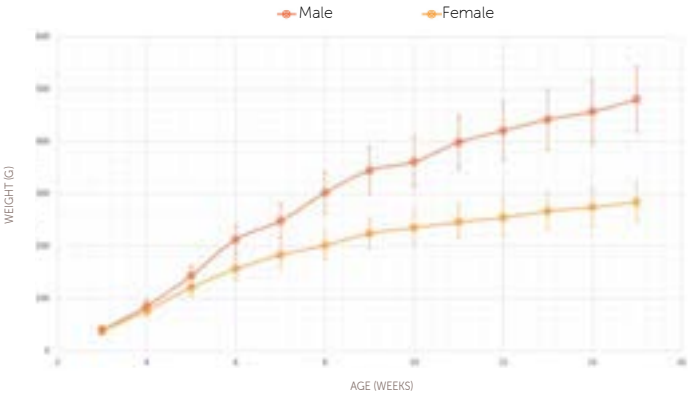
NOMENCLATURE: HsdSage: LE-*Pink1* ^{em1Sage}

Developed in collaboration with The Michael J. Fox Foundation, this model contains a deletion of the Pink1 (PTEN-induced putative kinase 1) gene, encoding for a serine/threonine protein kinase. Mutations in Pink1 are implicated in early-onset Parkinson's disease. Pink1 knockout rats show both motor impairments and dopaminergic cell loss, making this a useful model of Parkinson's disease.

Pink1 protein kinase localizes to the mitochondria and is thought to protect cells from stress-induced mitochondrial dysfunction. Mutations within this gene result in one form of autosomal recessive early-onset Parkinson's.

In humans, loss of function of Park6 leads to a form of early-onset Parkinson's disease. This occurs due to the role Park6 plays in protecting neurons from oxidative stress and cell death, making this an ideal model for the study of Parkinson's disease.

HsdSage: LE-*Pink1* ^{em1Sage}



CHARACTERISTICS

- Homozygous knockout rats exhibit complete loss of target protein
- Approximately 30% of Pink1 knockout rats display a hindlimb-dragging phenotype at 5 months of age
- Pink1 knockout rats show increased hindlimb fatigue at 7 weeks of age
- Pink1 knockout rats show increased number of hindlimb foot slips at 5 and 9 weeks of age as assessed by tapered balance beam
- Reports have suggested Pink1 knockout rats show a ~50% reduction in dopaminergic neurons in the substantia nigra at 8 months of age
- Background strain: Long Evans Hooded

RESEARCH USE

- Parkinson's disease
- Stress-induced neurological dysfunction

* When packing males, all animals will need to be packed as cage mates only. Otherwise, males will be packed separately.

TO ORDER: refer to page 99

MODEL CODE
364

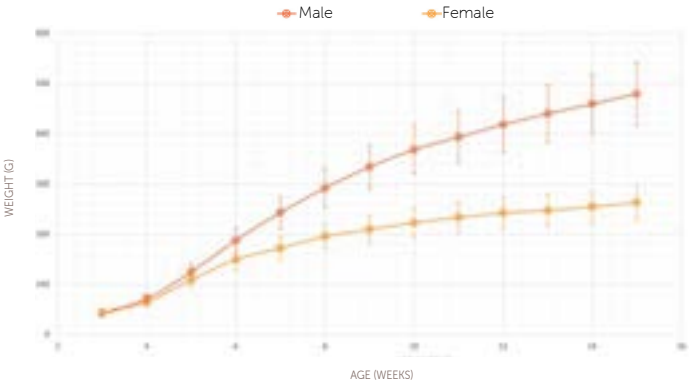
Mdr1a knockout rat

NOMENCLATURE: HsdSage: SD-*Mdr1a*^{em1Sage}

P-glycoprotein plays a critical role in efflux for both brain and liver. Homozygous null Mdr1a rats display increased exposure to CNS drugs in the brain, as well as increased bioavailability in the plasma for P-glycoprotein-specific substrates.

MDR1 encodes for P-glycoprotein and is a membrane-bound drug transporter expressed in the brain and intestine. It effectively blocks drugs from crossing the blood-brain barrier. P-glycoprotein can confer multiple drug resistance to tumor cells. Absence of P-glycoprotein creates a functional deficiency in the blood-brain barrier and results in elevated drug levels in many tissues, making this a useful model for efflux assay, efficacy, formulation, tissue distribution, studying neurotoxicology and chemotherapeutic agents.

HsdSage: SD-*Mdr1a*^{em1Sage}



CHARACTERISTICS

- Biallelic 20 bp deletion within *Abcba1* gene
- Increased oral bioavailability of P-glycoprotein-specific substrates
- Homozygous knockout rats display total loss of protein via Western blot
- Background strain: Sprague Dawley

RESEARCH USE

- DMPK assay
- PK-PD efflux assay
- Neurotoxicology
- Formulation drug-drug interactions
- Drug resistance
- Blood-brain barrier efflux
- Efficacy

* When packing males, all animals will need to be packed as cage mates only. Otherwise, males will be packed separately.

TO ORDER: refer to page 99

MODEL CODE
363

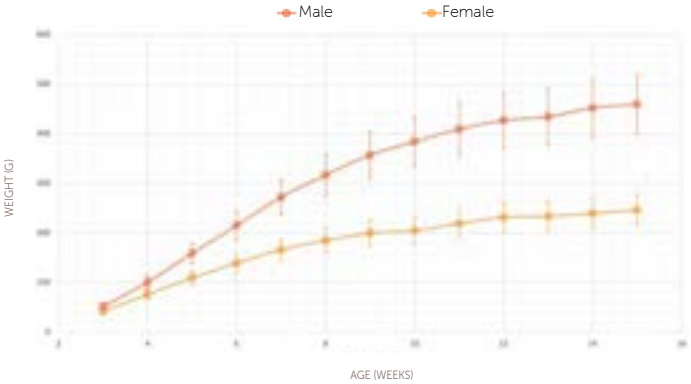
Mdr1a - Bcrp knockout rat

NOMENCLATURE: HsdSage: SD-*Mdr1a*^{em1Sage} *Abcg2*^{em1Sage}

P-glycoprotein and Bcrp both play a critical role in efflux for brain. Double homozygous null Mdr1a-Bcrp rats display increased exposure to CNS drugs in the brain, as well as increased bioavailability in the plasma for P-glycoprotein and Bcrp specific substrates.

MDR1 and BCRP are membrane-bound drug transporters expressed in the brain. Each effectively blocks specific drugs from crossing the blood-brain barrier. P-glycoprotein and Bcrp can confer multiple drug resistance to tumor cells. Absence of P-glycoprotein and Bcrp creates a functional deficiency in the blood-brain barrier and results in elevated drug levels in many tissues, making this a useful model for efflux assay, efficacy, formulation, tissue distribution, studying neurotoxicology and chemotherapeutic agents.

HsdSage: SD-*Mdr1a*^{em1Sage} *Abcg2*^{em1Sage}



CHARACTERISTICS

- Biallelic 20 bp deletion within *Abcba1* gene and 588 bp deletion within the *Abcg2* gene
- Increased oral bioavailability of P-glycoprotein and Bcrp specific substrates
- Homozygous knockout rats display total loss of both proteins via Western blot
- Background strain: Sprague-Dawley

RESEARCH USE

- DMPK Assay
- PK/PD Efflux Assay
- Neurotoxicology; Formulation
- Drug-drug interactions
- Drug resistance
- Blood-brain barrier efflux
- Efficacy

* When packing males, all animals will need to be packed as cage mates only. Otherwise, males will be packed separately.

TO ORDER: refer to page 99

MODEL CODE
493

Humanized ACE2 (hACE2) knockin rat

NOMENCLATURE: Hsd:SD-*Ace2*$^{em1(ACE2)Env}$

Angiotensin-converting enzyme 2 (ACE2) is an integral membrane zinc metalloprotease that is highly expressed in several human tissues including the gastrointestinal tract, liver, gallbladder, kidney, urinary bladder, testes, placenta and fallopian tube. It is also expressed at more moderate levels in the lungs and pancreas. ACE2 serves as the primary receptor for cell entry for the SARS-CoV and SARS-CoV-2 viruses. Binding of the coronavirus spike (S) protein to ACE2 initiates fusion of the cell and viral membranes for cell entry. ACE2-S protein binding is the critical initial step for coronavirus infection and is being investigated as a potential target for anti-viral therapeutics.

ACE2 is also a key enzyme in the renin-angiotensin system (RAS). Activation of the RAS pathway results in increased sodium and water retention, which leads to elevated blood volume and arterial pressure. ACE2 regulates RAS activity by cleaving angiotensin I and II into angiotensin 1-9 and angiotensin 1-7, respectively. As such, ACE2 is a common target for the treatment of hypertension.

The hACE2 knockin rat model was generated through CRISPR-based technology. A codon optimized human *ACE2* cDNA expression cassette was integrated into the rat *Ace2* gene, causing the rat *Ace2* gene promoter and other regulatory elements to drive expression of the human ACE2 protein while terminating rat *Ace2* gene expression, making this a useful rodent model for studying SARS-CoV-2 and COVID-19.

CHARACTERISTICS

- Genotyping of lung tissue from heterozygous and homozygous females and hemizygous males confirmed expression of the human *ACE2* gene and a lack (or reduction) of rat *Ace2* gene expression.
- Background strain: Sprague Dawley

RESEARCH USE

- Infectious disease
- COVID-19
- SARS

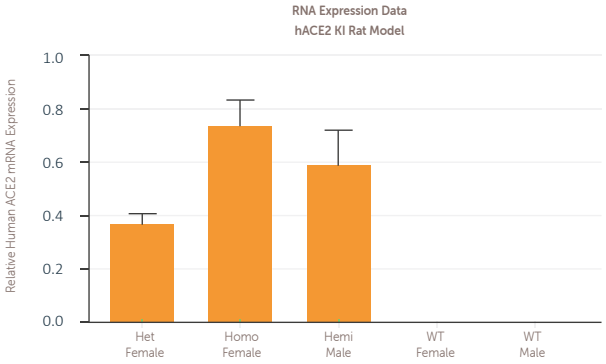
Academic pricing

AGE (weeks)	PRICE PER ANIMAL
4-12	€ 249,10
Over 12 weeks, add per week	€ 15,90

Commercial pricing

AGE (weeks)	PRICE PER ANIMAL
4-12	€ 519,40
Over 12 weeks, add per week	€ 15,90

Hsd:SD-*Ace2*$^{em1(ACE2)Env}$



Relative human *ACE2* expression in a heterozygous (Het) female, homozygous (Homo) female, and hemizygous (Hemi) male hACE2 knockin rat, or a wild type (WT) female and male.

TO ORDER: refer to page 99

Pre-developed transgenic rat models.

Advance your drug discovery research with predictive and translational models.

Our pre-developed models cover various therapeutics, such as neuroscience, ADMET, cardiovascular, respiratory, and oncology. Our breadth of pre-developed knockout and knockin models are available to provide the scientific community access to popular models for use in basic and preclinical research applications.

Our portfolio of pre-developed transgenic models includes over 80 rat models. The table below details a subset of our popular models available for the research community.

NEUROSCIENCE

Alzheimer's Disease	Autism	Pain	Parkinson's Disease*	Schizophrenia	Cre Models
ApoE KO rat	CHD8 KO rat	Faah KO rat	α-Synuclein A53T KI rat	BDNF KO rat	5Ht3a-Cre KI rat
hApoE2 KI rat	Cntnap2 KO rat	Oprm1 KO rat	α-Synuclein KO rat	Cacna1c KO rat	CamKIIa-Cre KI rat
hApoE3 KI rat	Fmr1 KO rat	p75^{NTR} KO rat	Lrrk1 KO rat	Chrna7 KO rat	DAT-Cre KI rat
hApoE4 KI rat	Gabrb3 KO rat	Trpv1 KO rat	Lrrk2 KO rat	Disc1 KO rat	Parvalbumin-Cre KI rat
App KO rat	MeCP2 KO rat		Lrrk1-Lrrk2 KO rat	Pde4b KO rat	Sst-Cre KI rat
BDNF KO rat	Met KO rat		Park2 (Parkin) KO rat		tdTomato KI rat
	mGluR5 KO rat		Park7 (DJ-1) KO rat		TH-Cre KI rat
	Nrxn1 KO rat		Pink1 (Park6) KO rat		Tph2-Cre KI rat
	Nlgn3 KO rat		Pink1/Parkin KO rat		Vgat-Cre KI rat
	Rbfox1 KO rat				VIP-Cre KI rat

ADMET

Transporters	Xenobiotic
Bcrp KO rat	AHR KO rat
BSEP KO rat	CAR KO rat
Mdr1a KO rat	Ppara KO rat
Mdr1a-1b KO rat	PXR KO rat
Mdr1a-Bcrp KO rat	PXR/CAR KO rat
Mrp1 KO rat	PXR/CAR/AHR KO rat
Mrp2 KO rat	
Oat1 KO rat	
Oat3 KO rat	
Oct1 KO rat	
Oct2 KO rat	

ONCOLOGY

Cell Proliferation	DNA Repair	Immunotherapy
p53 KO rat	Prkdc KO rat	B-NDG B2m KO mouse
Pten KO rat		B-NDG KO mouse
Rag2-Il2rg (R2G2®) KO mouse		B-NDG hIL15 KI mouse

IMMUNOLOGY

Inflammation	
Cox1 KO rat	Rag1 KO rat (Sprague Dawley)
Cox2 KO rat	Rag2 KO rat (Fischer 344)
Lgals1 (Gal1) KO rat	Rag2 KO rat (Sprague Dawley)
Prkdc KO rat	Rag2-Il2rg (R2G2®) KO mouse
Rag1 KO rat (Fischer 344)	Tbx21 (T-beta) KO rat

RESPIRATORY

Cystic Fibrosis
CFTR KO rat

INFECTIOUS DISEASE

COVID-19
hACE2 KI rat
hACE2 KI mouse
hTmprss2 KI mouse
hACE2/hTmprss2 KI mouse

CARDIOVASCULAR

Atherosclerosis
ApoE KO rat
hApoE2 KI rat
hApoE3 KI rat
hApoE4 KI rat
Ldlr KO rat
Leptin KO rat

For more information on our pre-developed transgenic models, please visit **inotivco.com** or contact us at **GEMSOrders@inotivco.com**

TO ORDER: refer to page 99

MODEL CODE
002

Aged rats

NOMENCLATURE: Hsd:Sprague Dawley® SD® (code 002) (Sprague Dawley®)

AGE (months)	BASE PRICE	ADD PER MONTH
3-12	P.O.R.	P.O.R., starting 4th month
12-18	P.O.R.	P.O.R., starting 13th month
18+	P.O.R.	P.O.R., starting 19th month

Albino. Originated by the Sprague-Dawley Company, Madison, Wisconsin, in 1925 through a series of crosses begun with a single-hooded male and six albino females of unknown origin. Current Inotiv colonies are direct descendants of this original colony.

SD® is a registered trademark of Inotiv.

Cohorts of the listed male rat models are reserved monthly for aged-animal inventory. Pricing of aged animals from the aging inventory is available upon request. If the requested aged animals are not available from our aging inventory, or require three or more months of maintenance prior to shipment, Inotiv will age a reserved cohort of animals to accommodate client research requirements and account for anticipated loss from natural attrition.

Pricing for client-reserved aging cohorts will be developed based on the requirements of the project. Prior to initialization of an aging project, Inotiv will confirm client expectations, the project work scope, and animal pricing with a written agreement of understanding.

RESEARCH USE

- Memory
- Osteoarthritis
- Neoplasia
- Immune response
- Longevity
- Vision and hearing
- Motor skills
- Renal degeneration
- Age-associated pathology
- Metabolism
- Neurobiology
- Cardiovascular
- Reproductive senescence

COMMON AGE-ASSOCIATED CONDITIONS INCLUDE:

- Hair loss
- Loss of motor skills and sensory perception
- Presence of spontaneous tumors
- Reduced immunologic and physiologic function
- Loss of vision, e.g. retinal degeneration, development of cataracts

When planning for your aged animal requirements, please consider the need to reserve extra animals on your order to replace any losses due to natural causes.

TO ORDER: refer to page 99

MODEL CODE
089

*Golden Syrian Hamsters

NOMENCLATURE: HsdHan®:AURA

AGE (weeks)	PRICE PER ANIMAL
3	€ 54,05
4	€ 59,25
5	€ 67,95
6	€ 76,20
7	€ 86,30
8	€ 93,35
9	€ 103,40
Over 9 weeks, add per week	€ 27,95
Untimed pregnant female**	€ 263,30
Time mated female**	€ 263,30
Female with litter	€ 236,05
Proven breeder	€ 118,30

** For our pregnancy policy, refer to page 99.

Golden brown and white. Colony established in 1994 with stock originating from Zentralinstitut fur Versuchstiere, Hannover, Germany. The source for the Hannover colony was the Sprague-Dawley Company in 1973.

Han® is a registered trademark of Inotiv.

* This specie is bred in US only. Importation is subject to a Fish and Wildlife Declaration Fee.

CHARACTERISTICS

- Litter average: 9.0
- Excellent reproductive performance

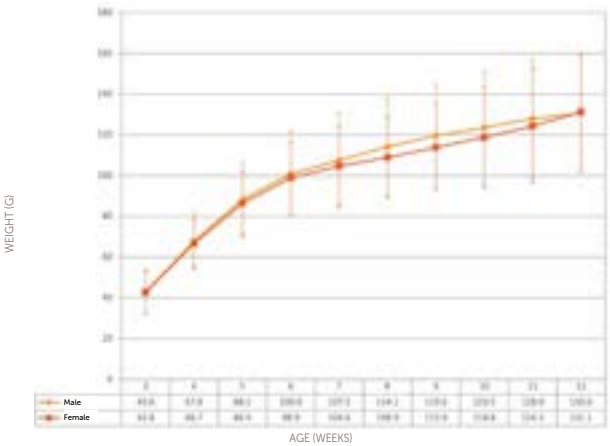
ADDITIONAL AVAILABLE DATA

- Hematology
- Clinical chemistry

RESEARCH USE

- Syrian Hamster Embryo (SHE) Cell Transformation Assay
- Toxicology
- Carcinogenesis
- Behavior
- Hypercholesterolemia
- Infectious disease (*Clostridium difficile*, SARS-CoV-2)
- Hibernation

HsdHan®:AURA



GROWTH CHART DATA SHOULD BE USED AS A GUIDELINE ONLY.
ANIMALS WERE BRED AND MAINTAINED ON TEKLAD GLOBAL 2018S DIET.

MODEL CODE
201

*Cotton Rat

NOMENCLATURE: Hsd:Cotton Rat

AGE (weeks)	PRICE PER ANIMAL
3	€ 405,05
4	€ 449,85
5	€ 489,60
6	€ 538,35
7	€ 571,85
8	€ 628,25
9	€ 654,05
Over 9 weeks, add per week	€ 37,15

Color combination varies: gray, brown, black. *Sigmondon hispidus* (Cotton Rat) is a New World rodent that was developed by the National Institutes of Health, Bethesda, Maryland, and Virion Systems, Inc. In 1996, Harlan obtained a breeding nucleus from Virion Systems, Inc. Harlan became Envigo in 2015, then Envigo was acquired by Inotiv in 2021.

* This specie is bred in US only. Importation is subject to a Fish and Wildlife Declaration Fee.

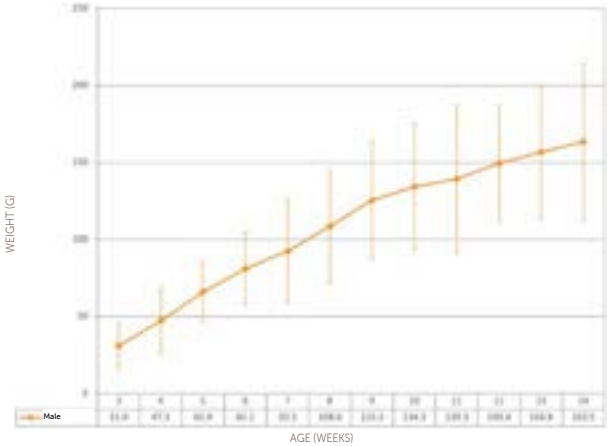
CHARACTERISTICS

- Litter average: 5.5
- Susceptible to a wide range of human infectious disease agents

RESEARCH USE

- Adenoviral vector-based gene therapy
- Infectious disease pathogenesis
  - Respiratory Syncytial Virus
  - Herpes Simplex
  - Parainfluenza Type 3
  - Polio
  - Measles
  - Monkeypox
- Infectious disease immune response
  - SARS-CoV-2

Hsd:Cotton Rat



GROWTH CHART DATA SHOULD BE USED AS A GUIDELINE ONLY.
ANIMALS WERE BRED AND MAINTAINED ON TEKLAD GLOBAL 2018S DIET.

TO ORDER: refer to page 99

MODEL CODE
459

Dunkin Hartley

NOMENCLATURE: HsdDhl:DH

WEIGHT (g)	PRICE PER ANIMAL
175-199	€ 97,70
200-249	€ 103,55
250-299	€ 115,05
300 -349	€ 122,95
350-399	€ 133,00
400-449	€ 142,90
450-499	€ 153,05
500-549	€ 162,15
550-599	€ 172,65
Over 600, per 50 gr. extra	€ 13,55
Untimed pregnant female	€ 419,40
Time mated female	€ 460,20
Female with litter	€ 460,20
Proven breeder	€ 338,20
Retired breeder/Surplus	€ 81,45
UNO Microchip2	€ 8,70

Albino. Dunkin Hartley colony originally from Agriculture Research Centre at Comptom in 1976. HsdDhl:DH colony was obtained from Hall in 2006 due to closing down of this facility.

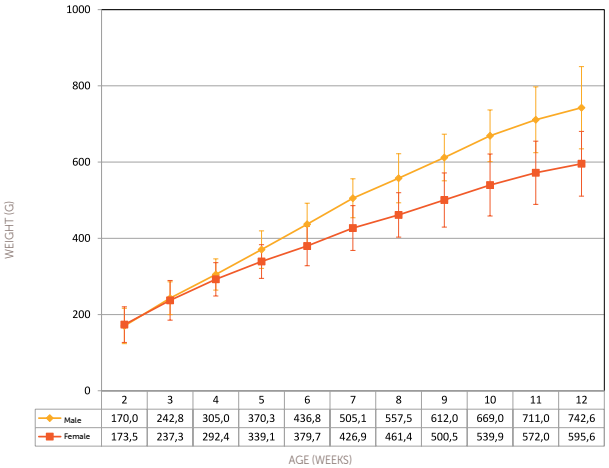
CHARACTERISTICS

- Individual identification via microchip on request

RESEARCH USE

- Compact animal with excellent breeding performance, used in multiple research disciplines

HsdDhl:DH



	2	3	4	5	6	7	8	9	10	11	12
Male	170,0	242,8	305,0	370,3	436,8	505,1	557,5	612,0	669,0	711,0	742,6
Female	173,5	237,3	292,4	339,1	379,7	426,9	461,4	500,5	539,9	572,0	595,6

GROWTH CHART DATA SHOULD BE USED AS A GUIDELINE ONLY.
ANIMALS WERE BRED AND MAINTAINED ON TEKLAD GLOBAL 2940 DIET.

TO ORDER: refer to page 99

MODEL CODE
444

New Zealand White

NOMENCLATURE: HsdIf:NZW

AGE (weeks)	PRICE PER ANIMAL
Up to 8	€ 237,55
9-11	€ 251,90
12	€ 295,10
13	€ 345,45
14	€ 392,20
15	€ 442,60
16	€ 492,95
17	€ 546,95
18	€ 604,50
19	€ 665,70
20	€ 730,55
Over 20 weeks, add per week	€ 28,45
Untimed pregnant female	€ 1.004,20
Time mated female* (age 16-20 weeks)	€ 1.053,65
Time mated female* (over 20 weeks, add per week)	€ 28,45
Female with litter	€ 1.156,90
Proven breeder	€ 665,65
Retired breeder/Surplus	€ 243,75
LH Injection	€ 29,65

Albino. Derived from three commercial UK sources of New Zealand White rabbits. Through acquisition of Interfauna UK to Harlan in 1995. Harlan became Envigo in 2015, then Envigo was acquired by Inotiv in 2021.

* Extra charges apply in case a timed rabbit mating needs to be set up on a Holiday or Sunday. Please refer to page 99.

CHARACTERISTICS

- Litter Average: 8.5
- Production software for tracing individual rabbit lineage
- Individual identification via tattoo, or microchip on request

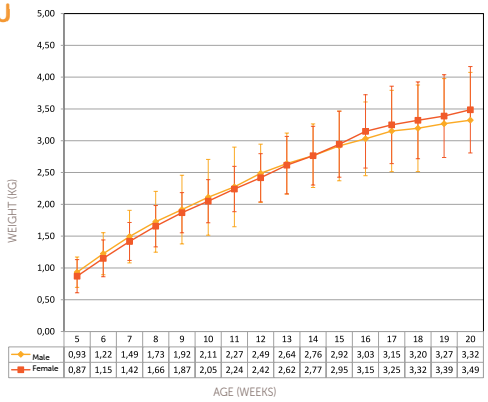
ADDITIONAL AVAILABLE DATA

- Hematology

RESEARCH USE

- Toxicology
- Teratology
- Dermatology
- Opthalmology
- Biomedical Research
- Osteology
- Artherosclerosis
- Antibody Production
- Cardiovascular
- Renal

HsdIf:NZW



GROWTH CHART DATA SHOULD BE USED AS A GUIDELINE ONLY.
ANIMALS WERE BRED AND MAINTAINED ON TEKLAD GLOBAL 2930 DIET.

MODEL CODE
081

New Zealand White

NOMENCLATURE: HsdOkd:NZW

PRICE PER ANIMAL
P.O.R.

Albino. HsdOkd:NZW colony derived in partnership with Oakwood Research Facility, Inc., Oxford, Michigan, since 1996

MODEL CODE
221

New Zealand White

NOMENCLATURE: HsdHra: (NZW) SPF

PRICE PER ANIMAL
P.O.R.

ADDITIONAL SERVICE OFFERINGS:

- Ocular screening solutions - Pre-shipment eye screening solutions identify optimal models for your ocular studies
- Social housing solutions – Social housing capabilities promote the compatibility and sociability of your rabbits (up to 2kg)
- We're able to offer single or double vascular catheterizations in our rabbit models to enable efficient and fast study start.
- Pre-implanted telemetry solutions – Partnered with Data Sciences International, Inc. (DSI), we're able to offer large models that are pre-implanted with telemetry devices to enable efficient and fast study start

MODEL CODE
222

Dutch Belted

NOMENCLATURE: HsdHra: DB (SPF)

PRICE PER ANIMAL
P.O.R.

ADDITIONAL SERVICE OFFERINGS:

- Ocular screening solutions - Pre-shipment eye screening solutions identify optimal models for your ocular studies
- Social housing solutions – Social housing capabilities promote the compatibility and sociability of your rabbits (up to 2kg)
- We're able to offer single or double vascular catheterizations in our rabbit models to enable efficient and fast study start.
- Pre-implanted telemetry solutions – Partnered with Data Sciences International, Inc. (DSI), we're able to offer large models that are pre-implanted with telemetry devices to enable efficient and fast study start

We do not recommend shipping rabbits under the age of 12 weeks. If you require a rabbit under 12 weeks of age, please contact customer service team for more details.

TO ORDER: refer to page 99

MODEL CODES
226, 228

Cynomolgus macaques

NOMENCLATURE: *M. fascicularis*

PRICE PER ANIMAL

P.O.R.

CHARACTERISTICS

- Various models of different origin: Asian (Chinese, Vietnamese, and Cambodian) and Mauritian
- Mauritius cynomolgus macaque is housed entirely indoor to preserve the Specific Pathogen Free (SPF) status of the model
- Primate holding facilities in Camarny, Spain and Strasburg, France

MODEL CODE
224

Rhesus macaques

NOMENCLATURE: *M. mulatta*

PRICE PER ANIMAL

P.O.R.

CHARACTERISTICS

- Origin: Chinese (pending availability)

Quality breeding farms

We work with the only high-quality breeding farm partners and our global veterinary group routinely. Our global veterinary group routinely conducts extensive audits of each farm to ensure supplier facilities are well maintained, the animals are well-cared for and healthy, and the export facilities are of high quality.

PRE-SHIPMENT AND TESTING SOLUTIONS

Our large inventory and comprehensive pre-shipment and testing solutions support a wide range of pre-testing specifications.

- **Documentation:**
  We maintain detailed and accurate records on the health of each animal, including sexual maturity
- **Enrichment:**
  Our training and socialization programs include cage-to-transfer box training, pole and collar training, social housing and environmental enrichment for NHPs better prepared to meet your needs
- **Screening exams:**
  We offer a wide range of available pre-shipment screening exams, including ocular and pathogen, to meet your study specifications, enhance your study success rate and potentially reduce the number of models to meet your 3Rs goals"

ADDITIONAL SERVICE OFFERINGS:

- Ocular screening solutions - Pre-shipment eye screening solutions identify optimal models for your ocular studies
- Social housing solutions – Social housing capabilities promote the compatibility and sociability of your rabbits
- Pre-implanted telemetry solutions – Partnered with Data Sciences International, Inc. (DSI), we're able to offer nonhuman primates that are pre-implanted with telemetry devices to enable efficient and fast study start
- Buy and board - provides top-level care for your NHP models to give you peace of mind while you focus on other phases of your study.
- Microbiology laboratory – on-site microbiology laboratory produces results faster than if samples were sent to a reference lab – recovering pathogens more readily by reducing the potential for loss or degradation
- Pole and collar acclimation solutions – The proven pole and collar acclimation solution can remove critical days from your animal receipt to study initiation window

TO ORDER: refer to page 99

Packing guidelines

The following are guidelines for you to use to determine the number of containers required to ship your orders. For reasons of animal welfare, special considerations are given for deviations in weather conditions during the year. Therefore packing densities are divided into a winter period (October - May) and summer period (June - September). Adjustments may apply based on transit times and order specifications. The shipping containers include:

- Viewing window
- IATA handling instructions
- ClearH2O® gel hydration source

ClearH2O® gel is recognized by the research industry as an innovative hydration source. Our veterinary staff recommends ClearH2O® gel to ensure proper hydration of your research models in transit.

MICE

WEIGHT (G)	SMALL	LARGE
10-17	26 (20)	50 (40)
17-25	20 (16)	45 (36)
25-30	16 (12)	40 (32)
30+	14 (10)	30 (24)
Pregnant	10 (10)	25 (20)
Aging	please contact us	

For certain stocks and strains, packaging density of male mice can be reduced due to risk of fighting. See page 100 "shipping male mice."

Retired breeders will be sent separately in a box with a divider.

RATS

WEIGHT (G)	SMALL	LARGE
< 50	12 (9)	30 (24)
50-75	10 (8)	25 (20)
75-100	8 (6)	20 (16)
100-125	7 (5)	16 (12)
125-150	7 (5)	16 (12)
150-175	6 (4)	14 (10)
175-200	6 (4)	14 (10)
200-225	5 (4)	12 (8)
225-250	4 (3)	10 (7)
250-275	3 (2)	8 (6)
275-300	3 (2)	8 (6)
300-325	3 (2)	8 (6)
> 325	2 (1)	6 (4)
Pregnant	2 (1)	6 (4)
Aging	*please contact us*	

HAMSTERS

WEIGHT (G)	US DOUBLE WIRE CONTAINER
25-60	16
61-74	14
> 74	12

GUINEA PIGS

WEIGHT (G)	NUMBER PER BOX
< 200	6
200-275	5
275-350	5
350-450	4
450-500	3
> 500	2

MUTANT MICE

WEIGHT (G)	DOUBLE INSULATED
10-25	15 (12)
Male nude	10 (10)

This box is for immunodeficient nude and SCID type of mice, as well as for any isolator reared and maintained mice

MUTANT RATS

WEIGHT (G)	DOUBLE INSULATED
< 50	8
50-100	6
100-150	4
150-200	3
> 200	2

RABBITS

WEIGHT (KG)	LARGE
All weights	1

ISOLATOR REARED MICE

AGE (WK)	ITC
4-10	20

All Inotiv isolator reared mice (for example, immune deficient animals can be sent in Transfer Isolator Chambers (ITC's). These ITC's give the animals extra protection and you can connect the ITC directly on your isolator. With the majority of the isolator reared stocks and strains it is not possible to order by weight.

The animals are shipped in IATA approved filtered boxes. The filtered boxes are supplied with agar and/or diet to assure that the animals arrive in excellent condition. All of our animals are shipped in climatized vehicles according to a weekly route.

In case customers request a non-standard type of box, this might be subject to surcharges.

TO ORDER: refer to page 99

Innovation and consistency

Diet should *reduce*, rather than introduce, variation. Teklad Global Diets® are the world's leading laboratory animal diets.

It's not enough to meet basic nutritional criteria. Diets should *reduce*, rather than introduce, variation. Innovatively designed for biomedical research, Teklad Global Diets® are an integrated range of natural ingredient diets for specific life stages.

TEKLAD GLOBAL DIETS® - YOUR FORMULA FOR SUCCESS

- Diets for multiple laboratory animal species
- Fixed formulation
- High-quality ingredients from approved regional suppliers
- Life stage and application appropriate
- Industry-recognized certified quality systems
- Global supply chain

By combining fixed formulation with rigorous ingredient control, the variation in nutrient and non-nutrient levels is minimized, meaning consistent results for you.

By combining **fixed formulation** with rigorous **ingredient control**, the variation in nutrient and non-nutrient levels is minimized, meaning **consistent results** for you.

TO ORDER: refer to page 99

Quality processes drive consistency

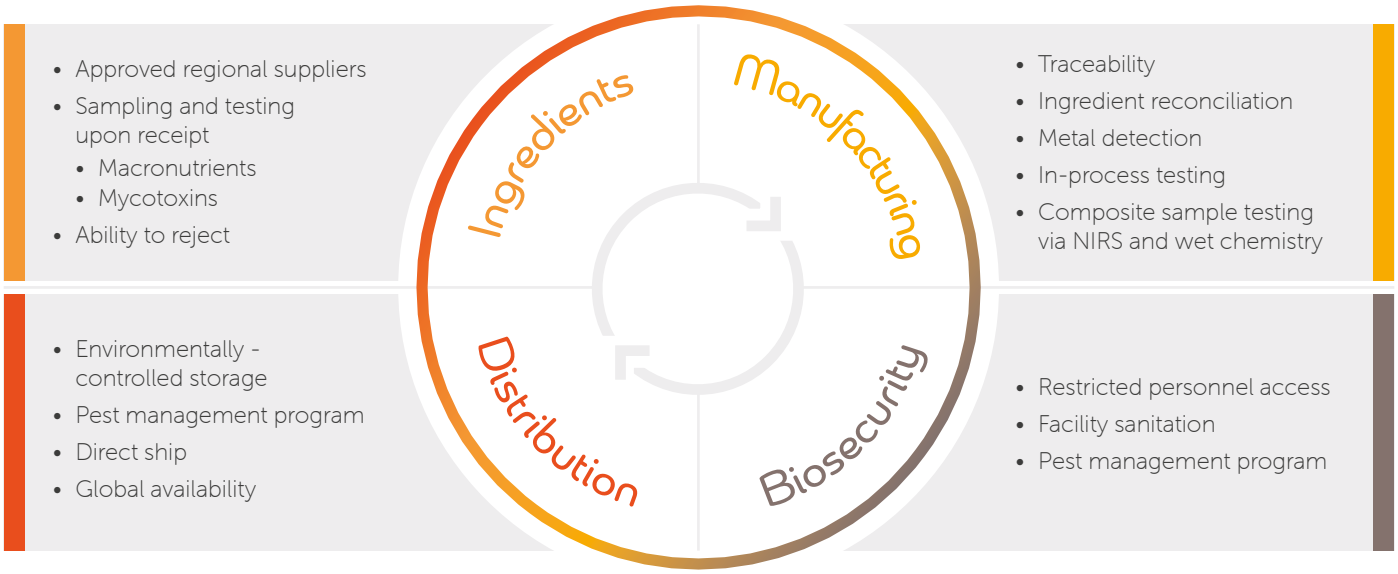
Fixed formula diets contain the *same* ingredients, in the exact *same* quantities, in *every* batch of diet.

- Diet is a critical variable in any study
- Our fixed formulation philosophy and quality practices translate to consistent research results for you
- Other manufacturers may use variable formula diets in which both ingredients and inclusion rates are changed to an extent unknown to the investigator

TEKLAD DIETS: A FIXED FORMULATION APPROACH	
Method	Ingredients from approved suppliers are tested prior to acceptance and use.
Rationale	Both nutrients and non-nutrients can have important effects.
Result	Minimize nutrient variation and manage non-nutrient variation while maintaining formula integrity.

Bulk ingredients are sampled across the depth and length of the load and tested for macronutrients and mycotoxins

Teklad Diet sites in Madison, WI, received recertification to the ISO9001:2015 standard



TO ORDER: refer to page 99

Teklad Global Rodent Diets

A RELATED FAMILY OF DIETS FOR SPECIFIC LIFE STAGES AND RESEARCH PURPOSES

TEKLAD GLOBAL RODENT DIETS					
Diet	**2014**	**2016**	**2018**	**2019**	**2020X**
Primary ingredients (Order of inclusion)	Wheat midds Wheat Corn Corn gluten meal Soy oil	Wheat Corn Wheat midds Corn gluten meal Soy oil	Wheat Corn Wheat midds **Soybean meal** Corn gluten meal Soy oil	Wheat Corn Corn gluten meal Wheat midds Soy oil	Wheat Corn Corn gluten meal Wheat midds Soy oil
CALCULATED NUTRIENT PROFILE (AS FORMULATED)					
Protein %	14.3	16.4	18.4	19.2	19.4
Fat %	3.7	3.7	6.0	9.0	6.5
Metabolizable energy	2.9 kcal/g 12.1 kJ/g	3.0 kcal/g 12.6 kJ/g	3.1 kcal/g 13.0 kJ/g	3.3 kcal/g 13.8 kJ/g	3.1 kcal/g 13.0 kJ/g
Isoflavone content*	<20 mg/kg	<20 mg/kg	**225-340 mg/kg**	<20 mg/kg	<20 mg/kg
USE & FEATURES					
Life stage	Long-term maintenance	Growth, maintenance	Breeding, growth	Breeding, higher energy	Breeding, growth
Purpose and benefits	• Prolonged maintenance • Aging • Toxicology • Oncology	• Growth • Maintenance • Toxicology • Oncology	• Breeding • Growth • Maintenance • General purpose	• Breeding • Genetically - engineered mice • Poorly performing strains • Oncology	• Breeding • General purpose • Estrogen-sensitive breeding studies • Reproductive toxicology • Oncology

* Expected range of genistein + daidzein (aglycone) based on quarterly measurement of diet

TEKLAD GLOBAL RODENT DIETS - DESIGNED TO REDUCE EXPERIMENTAL VARIABILITY

- Modern formulations
- Levels of protein, energy, vitamins and minerals more closely align with nutritional requirements
- Reduce or eliminate soybean meal, and exclude alfalfa meal, the major sources of phytoestrogens in rodent diets
- Vegetarian diets eliminate nitrosamines as a research variable
- Available globally to promote protocol consistency

VARIATIONS IN PRODUCT CODE NOMENCLATURE

- '9' in the second digit - the diet has been irradiated
- 'S' - the autoclavable version, supplemented with vitamins to account for presumed losses
- 'X' - extruded form; exception is 2019 which is extruded
- 'C' - certified; a representative sample is tested for a panel of contaminants
- 'M' - meal form
- 'MI' - product produced at Mucedola, Italy

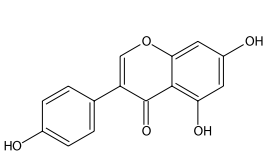
Not all product combinations are produced regularly or stocked locally.

TO ORDER: refer to page 99

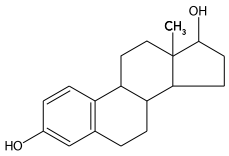
Ingredient selection

THE KEY TO REDUCING RATHER THAN INTRODUCING VARIATION

INGREDIENT	COMPONENT	SIGNIFICANCE
Soybean meal	Isoflavones: Genistein, Daidzein	Selective Estrogen Receptor Modulator
Alfalfa meal	Coumestrol	Selective Estrogen Receptor Modulator
	Chlorophyll	Interferes with fluorescent imaging
Fish meal **Meat meal**	Nitrosamines	Potential carcinogen



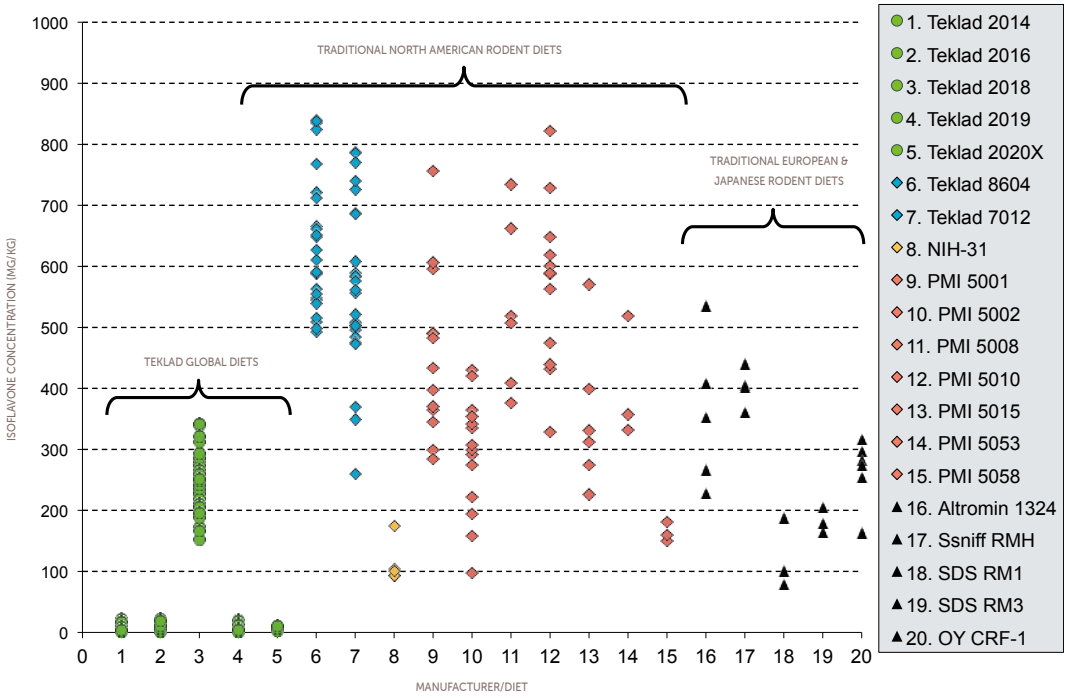
Genistein



Estradiol

VARIATION IN ISOFLAVONE LEVELS (GENISTEIN + DAIDZEIN) BETWEEN DIETS AND WITHIN BATCHES OF THE SAME DIET

Plot shows isoflavone levels for traditional diets from North America (blue, yellow, red), Europe and Japan (black) and Teklad Global Rodent Diets (green). Data is compiled from published literature and commercial laboratory analysis. Each symbol is one value; symbols within a column denote multiple values for that diet.



For experimental endpoints sensitive to isoflavones, batch-to-batch variation can lead to inconsistency, confounding your interpretation of results.

TO ORDER: refer to page 99

KEY PRINCIPLES

- Isoflavone range in rodent diets that contain soybean meal is 100-700 mg/kg
- Estrogen receptors (ER) are widely distributed in tissues
- Isoflavones have considerable access to ER by virtue of high serum levels

References: inotivco.com/phytoestrogen-references

CHALLENGE: ISOFLAVONES IMPACT RESEARCH

- No simple absolute threshold for the physiological effects of phytoestrogens
- Difficult to predict magnitude and direction of response
- Their action reduces effectiveness of animal model
- Preclinical research in rodent models fed diets containing soybean meal may not translate to human populations due to differences in consumption levels and metabolism

ADDITIONAL RESOURCES:

- Dietary phytoestrogens, a source of research variation, Volume 1
- Phytoestrogens limit translation of preclinical results to clinical outcomes - Volume 2"

WAYS IN WHICH ISOFLAVONES IMPACT RESEARCH

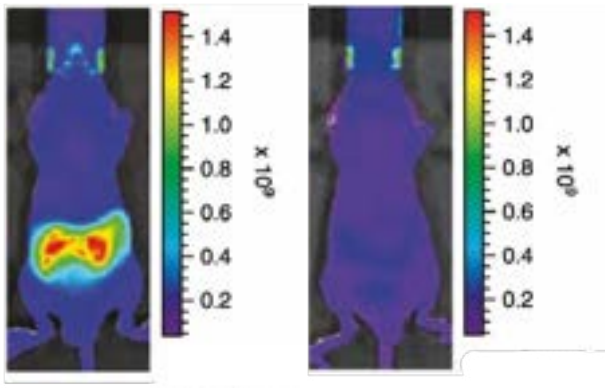
RESEARCH AREA	EFFECTS DESCRIBED IN THE LITERATURE
Oncology	Modulate tumor growth, latency, multiplicity, metastasis; diminish action of drugs such as tamoxifen and letrozole.
Reproductive	Increase uterine weight; accelerate vaginal opening; affect response to exogenous estrogens/xenobiotics.
Endocrine	Differences in body composition (weight, adiposity), glucose and insulin homeostatsis, bone density, and blood pressure.
Neuroscience	Performance differences on tests measuring anxiety behaviors and response to pain stimuli.
Immunology	Modulate immune organ development; display anti-inflammatory and antioxidant actions.

Solution: Inotiv's minimal isoflavone Teklad diets lead to reliable, repeatable research results.

TO ORDER: refer to page 99

Teklad Global Rodent Diets

FOR FLUORESCENT IMAGING



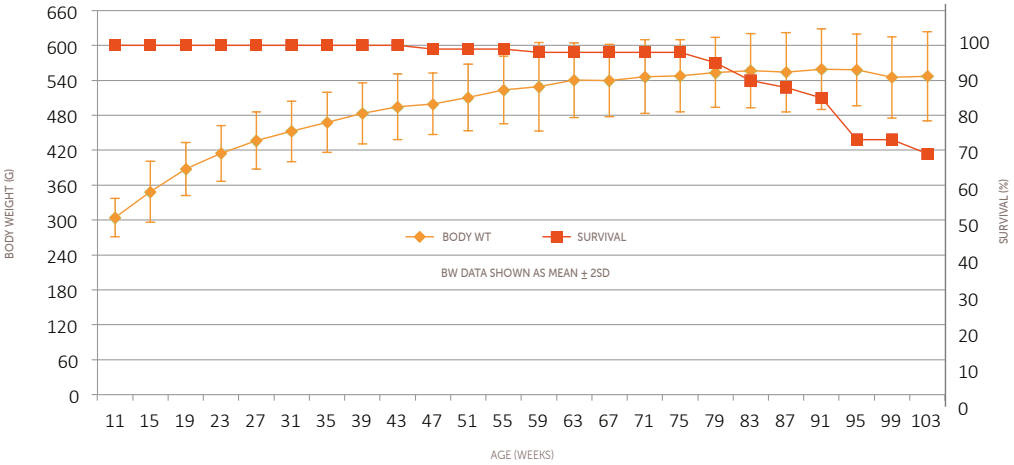
- Exclusion of alfalfa meal practically eliminates chlorophyll, the source of autofluorescence in the gut region
- Teklad Global Rodent Diets significantly reduce background autofluorescence and are suitable for many imaging applications

Teklad Global Rodent Diets

DESIGNED TO IMPROVE ANIMAL WELFARE

- Other commonly used diets supply protein well in excess of requirements and can contribute to early mortality
- There are benefits to lower protein, lower energy standard diets for toxicology and safety studies

GROWTH AND SURVIVAL CURVES



Model

- Hsd:Sprague Dawley® SD® males (n=200)

Diet

- Teklad 2014 (14% protein) starting at 8 weeks of age

Results

- Body weight plateaus at ~550 grams without diet restriction; compare to CD® IGS rat which are 100-200 grams heavier when fed more typical standard diets.
- Survival at 2 years ~68%; compare to typical 2 year survival in CD® IGS rat of ~35-40%.

TO ORDER: refer to page 99

Teklad Global Diets® at a glance

SPECIES	RODENT					CANINE		
Product	**2014**	**2016**	**2018**	**2019X**	**2020X**	**2021**	**2025**	**2027**
Irradiated (29xx)	2914	2916	2918	2919X	2920X			
Certified (C)	2014C	2016C	2018C			2021C	2025C	2017C
Autoclavable (S)			2018S 2018SX	2018SX	2020SX			
Extruded (X)			2018SX	Standard	Standard	Standard	Standard	Standard
KEY FEATURES								
	14% Protein 4% Fat	16% Protein 4% Fat	18% Protein 6% Fat • Moderate Phytoestrogen	19% Protein 9% Fat	19% Protein 6% Fat	21% Protein 6% Fat	25% Protein 9% Fat	27% Protein 16% Fat
	• Vegetarian (no nitrosamines) • Minimal phytoestrogen (2014, 2016, 2019X, 2020X) • Suitable for imaging studies (no alfalfa meal) • Extruded versions dramatically reduce clumping and hardening after autoclaving and reduce waste					• High-quality poultry by-products • Smooth transition between diets • Options for all life stages • All options certified		
PURPOSE AND BENEFITS								
	• Prolonged Maintenance • Aging • Toxicology • Oncology	• Growth • Maintenance • Toxicology • Oncology	• Breeding • Growth • Maintenance • General Purpose	• Breeding • Genetically engineered mice • Poorly performing strains • Oncology	• Breeding • General purpose • Estrogen-sensitive breeding studies • Reproductive Toxicology • Oncology	• Maintenance	• Gestation • Lactation • Growth • Maintenance	• Gestation • Lactation • Growth
CALCULATED AVERAGE NUTRIENT PROFILE (AS FORMULATED)								
Protein %	14.3	16.4	18.4	19.2	19.4	21.0	26.3	28.6
Fat %	3.7	3.7	6.0	9.0	6.5	6.7	10.5	16.8
Crude Fiber %	4.1	3.3	3.5	2.6	2.7	4.0	3.0	2.7
NDF %	18.0	15.2	14.7	12.1	12.3	13.7	11.5	9.5
Energy Density								
Kcal/g	2.9	3.0	3.1	3.3	3.1	3.2	3.5	3.8
KJ/g	12.1	12.6	13.0	13.8	13.0	13.4	14.6	15.9
FIXED-FORMULA - ACHIEVING HIGH CONSISTENCY OF NUTRIENTS COUPLED WITH THE SAME INGREDIENT INCLUSIONS IN EVERY BATCH								
	✓	✓	✓	✓	✓	✓	✓	✓

[1] Neutral detergent fiber (NDF) is an estimate of insoluble fiber, including cellulose, hemicellulose, & lignin. Crude fiber methodology underestimates total fiber.

Product

- Not all products are stocked locally, but are available upon request with extended lead time and additional fees.
- All diets can be available in meal form (M); some may require extended lead time and additional fees.

Irradiated

- The irradiated version is identical to the standard version, with the exception of packaging.
- The "9" in the second position of the product code denotes the product has been irradiated.

Autoclavable

- The autoclavable version (S) differs in the level of vitamin supplementation, which is increased to account for presumed losses due to autoclaving.

TO ORDER: refer to page 99

Teklad Global Diets® at a glance

SPECIES	RABBIT		GUINEA PIG		PRIMATE			FELINE	FERRET
Product	**2030**	**2031**	**2040**	**2041**	**2050, 2050A**	**2055**	**2056**	**2060**	**2072**
Irradiated (29xx)	2930	2931	2940	2941					
Certified (C)	2030C	2031C	2040C	2041C	2050C	2055C	2056NC	2060C	2072C
Autoclavable (S)									
Extruded (X)					Standard	Standard	Standard	Standard	Standard
KEY FEATURES									
	14% Protein 3% Fat • Vegetarian	14% Protein 2% Fat • Vegetarian • Higher Fiber	18% Protein 3% Fat • Moderate Phytoestrogen	17% Protein 4% Fat • Higher Fiber	20% Protein 4% Fat • Higher Fiber	25% Protein 5% Fat	23% Protein 6% Fat • Vegetarian • Minimal Phytoestrogen	32% Protein 12% Fat • Includes a urinary acidifier	36% Protein 18% Fat • Highly Digestible • Low ash poultry by-products
			Global Guinea Pig diets are fortified with stabilized vitamin C		Global Primate diets are fortified with stabilized vitamin C				
PURPOSE AND BENEFITS									
	• Gestation • Lactation • Growth	• Maintenance • Long-Term Studies	• Gestation • Lactation • Growth	• Maintenance	• Gestation • Lactation • Growth • Maintenance	• Gestation • Lactation • Growth • Maintenance	• Gestation • Lactation • Growth • Excludes Wheat Gluten • May improve stool consistency • Maintenance	• Gestation • Lactation • Growth • Maintenance	• Gestation • Lactation • Growth • Maintenance
CALCULATED AVERAGE NUTRIENT PROFILE									
Protein %	17.2	14.5	19.2	17.6	20.0	25.6	23.9	34.0	39.0
Fat %	3.0	2.5	3.0	4.5	5.4	5.9	6.6	12.5	20.0
Crude Fiber %	13.7	22.8	12.2	15.8	8.8	3.5	3.1	1.8	1.2
NDF %	29.2	39.4	25.2	32.0	18.4	9.2	11.6	6.7	4.4
Energy Density									
Kcal/g	2.4	2.0	2.5	2.4	2.8	3.2	3.2	3.5	3.8
KJ/g	10.0	8.4	10.5	10.0	11.7	13.4	13.4	14.6	15.9
FIXED FORMULA - ACHIEVING HIGH CONSISTENCY OF NUTRIENTS COUPLED WITH THE SAME INGREDIENT INCLUSIONS IN EVERY BATCH									
	✓	✓	✓	✓	✓	✓	✓	✓	✓

Extruded

- For rodent diets, the combination of the extruded form (X) and appropriate fortification allows for superior autoclaving quality (decreased hardness and clumping) where problems are experienced with the autoclavable pellet form. Waste and fines are also dramatically reduced.

Certified

- There are no differences in the formula, ingredients, manufacturing standards, and quality control processes between non-certified and certified diets.
- A representative sample is tested for a panel of contaminants. This panel varies by region (US vs. Europe) reflecting differences in regulatory standards; contact local representatives for more information.
- If not stocked as certified (C), GLP certification can be made available by request, but a minimum order size or charge may be required.

TO ORDER: refer to page 99

Custom research diets, medicated diets

CUSTOM RESEARCH DIETS

Custom diets are developed for a specific purpose and benefit from your input and our expertise. With more than 20,000 formulas in our database attained over 40 years, Inotiv nutritionists have vast experience to draw upon. We are committed to developing and maintaining long-term client relationships.

USE CUSTOM RESEARCH DIETS TO:

Control nutrients

- Vitamin or mineral adjusted
- Protein or amino acid adjusted
- Lipid or fatty acid adjusted

Induce disease

- Atherogenic (cholesterol, fat, cholate)
- Diet-induced obesity (40-60% fat kcal)
- High carbohydrate (fructose, sucrose)
- NaCl adjusted
- Cuprizone demyelination

Dose animals

- Control of gene expression - doxycycline or tamoxifen containing diets
- Addition of client-supplied ingredients/compounds

Teklad custom diets are shipped throughout the world. Check with your local client service regarding requirements.

MEDICATED DIETS

As some compounds are best administered orally, several medicated diets are available from stock. Use as directed by a veterinarian.

T.2018.12F2 2018 Rodent Diet with 150 ppm Fenbendazole

Other medicated diets are available in small-scale or large-scale production. Contact us for more details.

BEDDING

Your animals are in continuous contact with bedding, yet importance of bedding is often overlooked.

Inotiv offers a full line of Teklad bedding including corn cob, wood and paper products, with these advantages:

- Most have been thoroughly tested in our animal barriers
- Several are produced in our own bedding plant, uniquely dedicated to production for the research community
- Available in certified and irradiated options

ENRICHMENT PRODUCTS

We offer several unique environmental enrichment items, featuring our 1922 Irradiated Enrich Mix for non-human primates. Cotton-based iso-PADS™, Diamond Twist and iso-BLOX™ enrichment and nesting materials for rodents combine enrichment with superior product sanitation and safety (no long strands or fibers).

Based on the nature of the products, some cannot be exported overseas without proper import licenses in the specific country of destination.

Ask a nutritionist!

Chat with one of our nutritionists online to discuss lab animal diet options, get technical support and product codes.

inotivco.com/laboratory-animal-diets
askanutritionist@inotivco.com

TO ORDER: refer to page 99

Custom research diet animal maintenance

Cohorts of HsdBlu:LE rats, Hsd:Sprague Dawley® SD® rats, C57BL/6NHsd mice, and other stocks and strains of Inotiv rodents, can be maintained on custom research diets within our maximum security production barriers.

The rodents are fed diets specified by the client for defined periods of time prior to shipment. Animals are shipped to the client using Inotiv environmentally controlled vehicles. Custom research diet animal maintenance for client-owned animals is also available.

BENEFITS OF INOTIV CUSTOM DIET ANIMAL MAINTENANCE

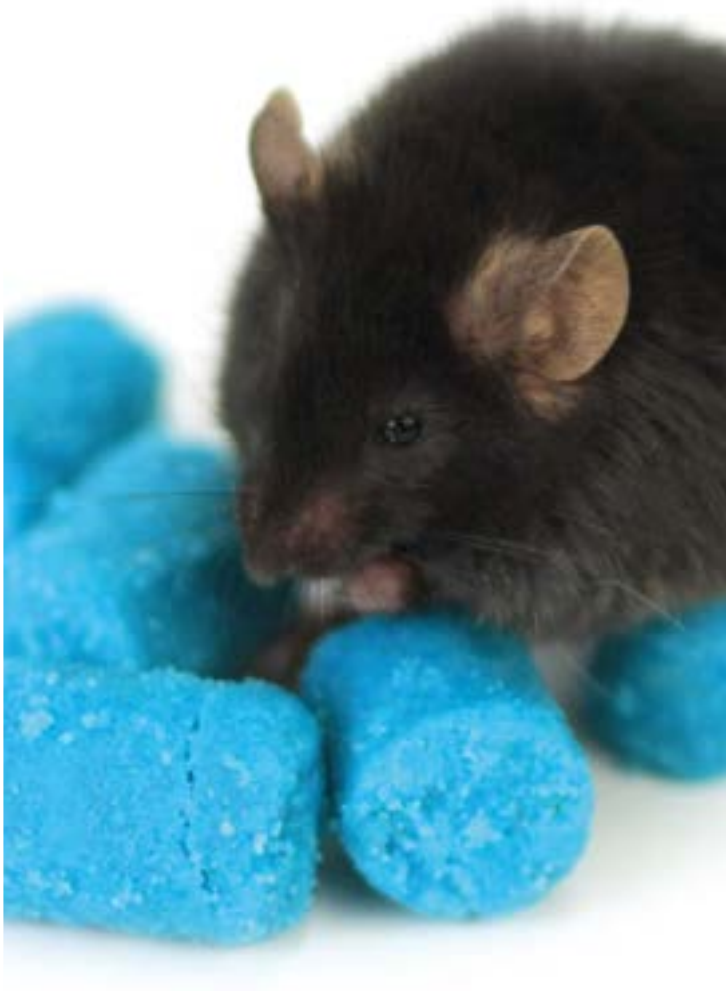
- Inotiv Teklad nutritionists, in collaboration with requesting investigators, customize the research diets to adjust nutrients and achieve experimental objectives.
- Animals are maintained on client customized diets within Inotiv maximum security production barriers until shipment.
- Health and genetic integrity of the models are protected.
- Reallocation of labor and other institutional resources.
- Development of in-house diet maintenance protocols is eliminated.
- The same diet can be fed after delivery to the client.

RESEARCH USE

- Obesity
- Diabetes mellitus
- Hypertension
- Hypercholesterolemia
- Osteoporosis
- Physiology
- Nutrition
- Pharmacology

DIET-INDUCED OBESITY (DIO) RODENT MODELS

- Randomly selected rats and mice are fed Inotiv Teklad irradiated custom research diets until approximately 14 weeks of age or as specified.
- Animals are provided ad libitum diet and automated water and weighed per client's protocol.
- Data for C57BL/6NHsd male mice, initiated on diet at three, six and nine weeks of age, available upon request.



TO ORDER: refer to page 99

Genetically engineered Models by CRISPR

RAT AND MOUSE MODELS TO YOUR SPECIFICATION IN AS FEW AS 4 MONTHS

Looking for an animal model to fit your specific research needs?

First, we reimagined the possibilities of genetic engineering in rats. Now we've introduced the world's fastest custom *in vivo* model generation service, powered by CRISPR-Cas9 genome editing technology. Go from idea to rat or mouse model in under half the time of traditional ES-cell based methods.

HOW IT WORKS

Looking for a knockout rat or mouse not included in our standard model portfolio?

Your Inotiv *in vivo* model development specialist will work with you to design a custom model to your exact specifications, using our CRISPR/Cas9 (licensed by The Broad Institute and ERS Genomics) or Zinc Finger Nuclease technologies licensed by MilliporeSigma, in as few as 4 months.

Using our Custom Model Builder, simply select your species, strain, gene of interest and desired mutation, and we will generate a model specific to your downstream research applications.

ADVANTAGES OF OUR ANIMAL MODEL CREATION

- Exclusive options—mice and rats, any strain
- Longest nuclease based expertise in the industry
- F1 breeding pair delivered in as few as 4 months
- Guaranteed germline transmission
- Reagent design, construction and validation
- Comprehensive project management
- Detailed, formal project reports

Gene Knockout

- Constitutive Knockout
  - Mouse (4 Months)
  - Rat (4 Months)
- Conditional Knockout
  - Mouse (6 Months)
  - Rat (6 Months)

Gene Mutation/Replacement

- Constitutive Knockin
  - Mouse (6 Months)
  - Rat (6 Months)
- Humanized Knockout
  - Mouse (6 Months)
  - Rat (6 Months)
- Point Mutation
  - Mouse (4 Months)
  - Rat (4 Months)

Targeted Transgenic

- Stable Gene Expression Safe Harbor Locus (Rosa26)
  - Mouse (5 Months)
  - Rat (5 Months)

Note: Timelines listed are to F1 identification of a F1 Het Breeder Pair. Founder (F0) identification will be 2 months sooner.

TO ORDER: refer to page 99

Contract breeding services

Inotiv has performed contract breeding services - rederivation, cryopreservation,revitalization, colony management, contract breeding, and quarantine services - for many years.

Originally developed to support our internal breeding operations, we began providing these services to customers. Experience gained through these customer engagements and our continuous investment in capabilities, facilities, and personnel, have enabled us to refine and formalize a comprehensive set of contract breeding service offerings.

Because these capabilities are core to supporting our own breeding operations, we fully understand the importance of high quality breeding services to colony management and to the integrity of the research process. We bring both a provider and customer perspective to the table when working with our customers to develop a plan of action.

Our contract breeding services employees are dedicated to providing high quality, reliable, and consistent results. By continuously striving to achieve this level of performance, we deliver not only what matters to our customers, but we aim to be the most dependable supplier of contract breeding services in the industry.

All contract breeding services are managed by a dedicated group of project managers who will work closely with you to develop a customized program to address your needs and requirements. You will always have a knowledgeable expert to liaise on your behalf with Inotiv's operation teams and and our 24/7 online colony management system, LabTracks™

REDERIVATIONS AND SPEED REDERIVATIONS - RAT AND MOUSE

Rederivation is a procedure used to establish pathogen free animals and to improve the overall animal health status of a colony. Inotiv uses embryo transfer or caesarean section to generate small cohorts of pups.

Rederivations and Speed Rederivations

SERVICE	REQUIREMENTS	PROJECT OUTCOME
Rederivation with health screening	• 5 donor males (6-27 wk) • 10 donor females (3-4 wk) or • 15 wild-type donor females (3-4 wk) • Genotype and background of donors	• Small cohort with a specified health status • Shipping and container fees are additional • Alternatively, maintain and breed colony through Contract Breeding Services
Speed rederivation with shipment of pregnant recipient females	• 5 donor males (6-27 wk) • 10 donor females (3-4 wk) or • 15 wild-type donor females (3-4 wk) • Genotype and background of donors	• Minimum of 2-3 pregnant recipient females at 7-14 days post embryo transfer • Health screening, shipping and container fees are additional

TO ORDER: refer to page 99

CRYOPRESERVATION - RAT AND MOUSE

Inotiv provides both embryo and sperm cryopreservation services. Embryo and sperm cryopreservation provides a means to permanently preserve the genetic integrity of an animal colony. It also provides a cost effective means to safeguard your valuable model lines in the event of a catastrophic colony disaster. Sperm cryopreservation also provides a cost effective way to preserve a mouse line that generally requires fewer donor animals. Although sperm cryopreservation requires fewer animals to complete a project, it only preserves a haploid genome. Our team is trained in state of the art IVF and freezing technologies and conduct permanent development and quality control to guarantee you the highest cryopreservation safety.

Cryopreservation - Embryo or Sperm

SERVICE	REQUIREMENTS	PROJECT OUTCOME
Embryo cryopreservation using homozygous, heterozygous or wild type females - Mouse and Rat	• 6-8 donor males (6-27 wk) • 35 wild-type donor females (3-4 wk) • Genotype and background of donors	• Approximatively 200-300 embryos • *In vitro* QC • Dual site storage, free for first year
Mouse Sperm cryopreservation	• 2-4 donor males (6-27 wk) • Genotype and background of donors	• Approximately 20-22 straws • *In vitro* fertilization QC (2 cell embryo stage) • Dual storage site, free for first year
Dual Site Storage Fee		• Dual site storage, first year is free • Up to 500 embryos in total • Up to 50 straws of sperm in total
Live Birth Quality Control for Mouse or Rat Cryopreserved Embryos	• 40 embryos, minimum	• *In vivo* QC to generate live offspring • Viable embryos transferred into recipient animals to generate live offspring • Confirmation of embryo viability
Live Birth Quality Control for Mouse Cryopreserved Sperm	• 2-3 straws of sperm	• *In vitro* QC to generate live offspring • Viable embryos transferred into reciepient animals to generate ive offspring • Confirmation of sperm viability

The above tables are guidelines to achieve the projected outcome. Your dedicated project manager will work with you to customize a plan that best suits your needs.

TO ORDER: refer to page 99

REVITALIZATION OF EMBRYO OR SPERM - RAT AND MOUSE

Revitalization is a procedure used to establish a small cohort of specific pathogen free animals from cryopreserved material (embryos or sperm). Inotiv offers several revitalization options:

Revitalization - Cryopreserved Embryo or Sperm

SERVICE	REQUIREMENTS	PROJECT OUTCOME
Revitalization of embryos with health screening – Mouse and Rat	• 100 cryopreserved embryos • Freezing and thawing protocol • QC report	• Small cohort with a specified health status • Includes rederivation services, recipient and offspring housing and health monitoring
Revitalization of sperm with health screening – Mouse only	• 3-5 straws of cryopreserved sperm • Freezing and thawing protocol • QC report	• Small cohort with a specified health status • Includes rederivation services, recipient and offspring housing and health monitoring
Revitalization of embryos with health screening (embryos from a discontinued line, either mouse or rat)		• Minimum of 1 offspring with a specified health status • Includes rederivation services, recipient and offspring housing and health monitoring

Once completed, you have the option of maintaining your line at Inotiv for continued colony maintenance and breeding.

TO ORDER: refer to page 99

CRYO/REDERIVATION COMBO - RAT AND MOUSE

In some situations it is practical to combine the rederivation effort with cryopreservation (embryos or sperm) of the same line. Inotiv offers the following cost effective options.

Cryo/Rederivation combo

SERVICE	REQUIREMENTS	PROJECT OUTCOME

Mouse Embryo	• Wildtype or customer females	• Rederivation to generate a small cohort of offspring at SPF or SOPF health status
		• Cryopreservation of 150 embryos
		• Includes
		  • Donor animal housing
		  • Recipient and offspring housing
		  • Health monitoring
		  • *In vitro* culture QC
		  • Dual storage site, free for the first year

Rat Embryo	• Wildtype or customer females	• Rederivation to generate a small cohort of offspring at SPF or SOPF health status
		• Cryopreservation of 100 embryos
		• Includes
		  • Donor animal housing
		  • Recipient and offspring housing
		  • Health monitoring
		  • *In vitro* culture QC
		  • Dual storage site, free for the first year

Mouse Sperm	• Wildtype or customer females	• Rederivation to generate a small cohort of offspring at SPF or SOPF health status
		• Cryopreservation of 10-12 straws of sperm
		• Includes
		  • Donor animal housing
		  • Recipient and offspring housing
		  • Health monitoring
		  • *In vitro* culture QC
		  • Dual storage site, free for the first year

The above tables are guidelines to achieve the projected outcome. Your dedicated project manager will work with you to customize a plan that best suits your needs.

TO ORDER: refer to page 99

CONTRACT BREEDING ISOLATOR SERVICES - RAT AND MOUSE

For situations in which it is not practical for you to breed and maintain your colonies within your own facility, Inotiv provides colony breeding and maintenance services within our isolator operations. Our team of experts will work closely with you to understand your needs and develop a customized colony management plan and health surveillance program. These services allow you to concentrate on your research and save space in your animal facility.

Contract Breeding Services

SERVICE	DESCRIPTION
Isolator breeding for mice	Routine Husbandry + breeding / reporting / HM / Fixed fee per isolator, additional fees per cage per week
Isolator breeding for rats	Routine Husbandry + breeding / reporting / HM / Fixed fee per isolator, additional fees per cage per week
Quarantine Isolator	Routine Husbandry / isolator or IVC / week - extended housing for donor animals after completed rederivation
Implantable Transponder ID Chip - Animal Identification	ISO Transponder Chip for animal identification - per individual chip
IVC or Open top caging	Routine husbandry + breeding / reporting / HM / fee per cage per week

Housing is subject to availability. Rederivation may be required depending on caging and location.

BENEFITS TO OUTSOURCING YOUR BREEDING PROJECT

- Fully integrated service solutions
- Predict cohort requirements to avoid over production
- 24/7 online access to your animal colony through LabTracks™
- Flexible solutions
- Active project management and personalized communication
- Customized breeding schemes, health monitoring and genetic monitoring programs
- Easy access to surgical services, custom model, cryopreservation, rederivation, preconditioning, aging and dosing through Teklad custom diets
- Expertise in breeding
- Multiple site locations across the globe
- Easy access to Inotiv animals for cross-breeding or rederivation

LabTracks™ colony management portal to provide you with regular reports on your project's progress.
servicesPMG.EU@inotivco.com

labtracks

Inotiv utilizes LabTracks(TM) software system, by Locus Technology, Inc., which provides a fully integrated on-line colony management system that supports daily inventory data, cryopreserved materials, animal husbandry and information on cage capacity for each project via a secured web portal. Our customers have secured access to only their project information at their own convenience, 24/7.

TO ORDER: refer to page 99

Full spectrum health monitoring

DESIGN. TEST. REPORT. INTERPRET.

The maintenance of healthy animal populations is vital to research integrity. Today's facility managers have to manage an increasingly complex research environment, balancing these pressures with the significant consequences of an outbreak mid-way through a research project.

Full Spectrum health monitoring supports facility managers in maintaining healthy research colonies. At its core is the ability to submit a wide range of NSP (non-sacrificial panel) samples as well as animals for testing on the best technology for target pathogens. This capability is underpinned with access to our experienced staff who are able to help identify vulnerabilities and build bio-secure processes, design test profiles that meet your research needs, provide insightful test reports, and be on hand to respond to bio-security issues should they occur.

- Bio-security assessment
- Test profile design
- 100% health validated testing
- Insightful reports
- Expert interpretation
- Support services

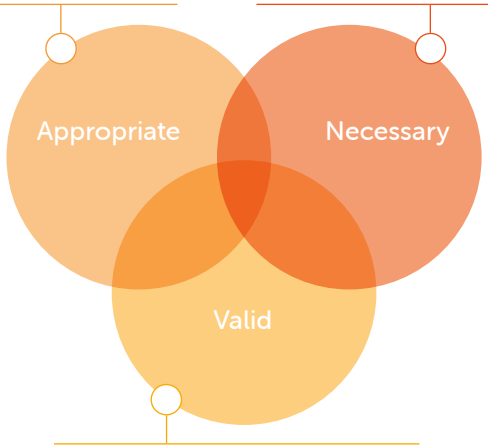
Inotiv Full Spectrum Health Monitoring

APPROPRIATE. NECESSARY. VALID.

Full Spectrum health monitoring utilizes test methods that have been 100% health validated for each target pathogen. We can do this because we are not tethered to a particular technology, enabling us to provide our customers with test profiles that are **appropriate**, **necessary** and **valid**.

Appropriate: As breeders and researchers, we understand what health monitoring protocols are appropriate to your specific research needs.

Necessary: With so many new pathogens available for test, we know what is – and is not – necessary to be included in test protocols.



Valid: Because Inotiv is not tethered to a particular technology, our health monitoring solution uses the best test methodology for each pathogen. And we only use 100% health validated techniques, ensuring you have meaningful results.

We select the best technology for each target pathogen and, where necessary, utilise secondary test methods to verify results. Inotiv maintains a variety of test technology methods in-house at facilities in the UK and mainland Europe, including PCR and rtPCR, ELISA, IFA, Vitek2, and MFIA.

See www.inotivco.com/fullspectrum for more information.

INOTIV DIAGNOSTIC LABORATORIES

Inotiv maintains its own diagnostic laboratory for customer health monitoring submissions in the UK, mainland Europe and Asia. Additional commercial diagnostic laboratories are utilised as necessary, in particular to confirm positive, borderline results.

Although we have pricing available for fixed profiles (such as those recommended by FELASA), Inotiv seeks to understand overall customer needs and price accordingly. Research objectives, model specifics and the nature of customer facilities and processes are all variables that Inotiv seeks to understand in order to advise the most appropriate testing profiles and practices. Depending on the sample type, pooling can offer attractive discounts.

Contact us

UK: Customer Services
RMS-UK-Technical-services@inotivco.com

EU Continent: Health Monitoring Lab
healthmonitorlab@inotivco.com

TO ORDER: refer to page 99

VIRUS TESTING

Serological evaluations are performed on immunocompetent animals (sentinels) or samples from immunocompetent animals from within a colony. For most mouse agents, the primary test is typically MFIA (Bead), supported by ELISA / IFA where a need exists for secondary testing.
Wherever possible, Inotiv promotes the appropriate use of modern NSP testing techniques. For virus testing, this typically includes serum and dried blood spot technology (DBS), but rtPCR can also be used when shipping faecal or environmental samples from IVC exhaust filters or surfaces.

Each test methodology offers additional customer benefits. Repeated use of serological testing, which uses specific antibodies to detect target agents, builds infectious trend information over time. Conversely, rtPCR testing provides and instantaneous viral picture of your colony.

POOLING

We do not recommend pooling DBS and serology samples due to the potential non-specific / idiopathic interactions between samples, causing false negative / positive reporting. Environmental samples, as well as faecal samples for rtPCR, can be tested up to a maximum of ten (10) into one, single sample.

A panel of available tests for viruses by species is listed below.

VIRUSES	TEST METHOD (RTPCR ONLY FOR MOUSE/RAT)	MOUSE	RAT	HAMSTER	GUINEA PIG	RABBIT	SAMPLE TYPE (CAN BE SPECIE SPECIFIC)
Ectromelia Virus [1]	MFIA / ELISA / rtPCR	✓					LA / S / DBS / F / E
Guinea Pig Adenovirus [4]	ELISA / rtPCR				✓		LA / S / DBS / F / E / OS
Guinea Pig Cytomegalovirus [4]	ELISA / rtPCR				✓		LA / S / DBS / F / E
Guinea Pig Parainfluenza Virus [4]	ELISA				✓		LA / S / DBS
Hamster Polyoma Virus [3]	ELISA			✓			LA / S / DBS
Hanta Virus [2,6]	MFIA / ELISA / rtPCR	✓	✓				LA / S / DBS / F / E
Kilham Rat Virus [2]	ELISA / rtPCR		✓				LA / S / DBS / F / E
Lactate Dehydrogenase-Elevating Virus	ELISA / rtPCR	✓					LA / S / DBS / F / E
Lymphocytic Choriomeningitis Virus [1,3]	MFIA / ELISA / rtPCR	✓	✓	✓			LA / S / DBS / F / E
Minute Virus of Mice [1]	MFIA / ELISA / rtPCR	✓					LA / S / DBS / F / E
Mouse Adenovirus type 1 (FL) [1,2]	MFIA / ELISA / rtPCR	✓	✓				LA / S / DBS / F / E
Mouse Adenovirus type 2 (K87) [1,2]	MFIA / ELISA / rtPCR	✓	✓				LA / S / DBS / F / E
Mouse Cytomegalo Virus	MFIA / ELISA / rtPCR	✓					LA / S / DBS / F / E
Mouse Hepatitis Virus [1]	MFIA / ELISA / rtPCR	✓					LA / S / DBS / F / E
Mouse Noro Virus [1]	MFIA / ELISA / rtPCR	✓					LA / S / DBS / F / E
Mouse K-Virus	ELISA / rtPCR	✓					LA / S / DBS / F / E
Mouse Kidney Parvovirus	ELISA / rtPCR	✓					F / E
Mouse Parvo Virus (MPV-NS1) [1]	MFIA / ELISA / rtPCR	✓					LA / S / DBS / F / E
Mouse Polyoma Virus	ELISA / rtPCR	✓					LA / S / DBS / F / E
Mouse Rotavirus (EDIM) [1]	MFIA / ELISA / rtPCR	✓					LA / S / DBS / F / E
Mouse Thymic Virus	IFA / rtPCR	✓					LA / S / DBS / F / E
Pneumonia Virus of Mice [1,2]	MFIA / ELISA / rtPCR	✓	✓	✓			LA / S / DBS / F / E / OS
Rabbit Adeno Virus	ELISA / rtPCR					✓	LA / S / DBS / F / E
Rabbit Corona Virus	ELISA					✓	LA / S / DBS
Rabbit Haemorrhagic Disease Virus [5]	ELISA / rtPCR					✓	LA / S / DBS / F / E
Rabbit Pox Virus (Myxomatosis)	ELISA / rtPCR					✓	LA / S / DBS / F / E
Rabbit Rotavirus [5]	ELISA / rtPCR					✓	LA / S / DBS / F / E
Rabbit calicivirus	rtPCR					✓	F / E
Rat Minute Virus [2]	ELISA / rtPCR		✓				LA / S / DBS / F / E
Rat Parvo Virus (type 1 and 2) [2]	ELISA / rtPCR		✓				LA / S / DBS / F / E
Rat Polyomavirus [2]	ELISA / rtPCR		✓				DBS / F / E / OS
Rat Theilo Virus [2]	ELISA / rtPCR		✓				LA / S / DBS / F / E
Reovirus Type 3 [1,2]	MFIA / ELISA / rtPCR	✓	✓				LA / S / DBS / F / E
Sendai Virus [1,2,3,4]	MFIA / ELISA / rtPCR	✓	✓	✓	✓		LA / S / DBS / F / E
Sialodacryoadenitis / Rat Coronavirus [2]	ELISA / rtPCR		✓				LA / S / DBS / F / E / OS
Simian Virus [5]	rtPCR						F / E / OS
Theiler's Murine Encephalomyelitis Virus [1]	MFIA / ELISA / rtPCR	✓					LA / S / DBS / F / E
Toolan H1 [2]	ELISA / rtPCR		✓				LA / S / DBS / F / E

(1) Mouse agents recommended by FELASA 2014 (quarterly and/or annual)
(2) Rat agents recommended by FELASA 2014 (quarterly and/or annual)
(3) Hamster agents recommended by FELASA 2014 (quarterly and/or annual)
(4) Guinea pig agents recommended by FELASA 2014 (quarterly and/or annual)
(5) Rabbit agents recommended by FELASA 2014 (quarterly and/or annual)
(6) Includes Hantaan, Seoul and Sin Nombre strains

Sample type:

DBS: Dry Blood Spot
F: Fecal
FS: Fur Swab
E: Environmental material (filter, swabs, other)
LA: Live Animal
OS: Oral Swab
S: Serum

TO ORDER: refer to page 99

BACTERIOLOGY

Cultured bacteria testing is used to detect pathogens unsuitable for serological techniques. Cultures are generated using samples (swabs or faeces) from specific sites on the animal. These can be taken from live animals at our laboratory or shipped as samples (oral, faecal) collected from animals at customer facilities utilising Inotiv's sampling kits for easy collection.

POOLING

Bacterial testing permits the pooling of samples. We recommend up to two (2) samples be pooled for oral or fur swabs. Environmental samples, as well as faecal samples for rtPCR, can be tested up to a maximum of ten (10) into one, single sample.

A panel of microbiological agents by species for bacteriology is listed below: Clearly highlighted are those recommended by FELASA 2014. Several rtPCR panels are available to quickly check for some prevalent agents.

BACTERIOLOGY	TEST METHOD (RTPCR ONLY FOR MOUSE/RAT)	MOUSE	RAT	HAMSTER	G. PIG	RABBIT	SAMPLE TYPE (CAN BE SPECIE SPECIFIC)
Bordetella bronchiseptica [4,5]	Culture / rtPCR	✓	✓	✓	✓	✓	LA / F / E / OS
Bordetella hinzii/ pseudohinzii	rtPCR	✓	✓	✓	✓	✓	E / OS
CAR bacillus [2,5]	ELISA / rtPCR	✓	✓		✓	✓	LA / S / DBS / F / E / OS
Chlamydophila caviae	IFA				✓		LA / S / DBS
Citrobacter rodentium [1]	Culture / rtPCR	✓	✓				LA / F / E
Clostridium piliforme [1,2,3,4,5]	MFIA / ELISA / rtPCR	✓	✓	✓	✓	✓	LA / S / DBS / F / E
Clostridium difficile (toxin A+B)	rtPCR	✓	✓	✓	✓	✓	F / E
Corynebacterium kutscheri [1,3,4]	Culture / rtPCR	✓	✓	✓	✓		LA / F / E / OS
Corynebacterium bovis (HAC)	rtPCR	✓	✓				LA / F / E / FS
Dermatophytes	Culture / rtPCR	✓	✓		✓	✓	LA / E / FS
Helicobacter spp. [1,2,3] *(Bilis, Ganmani, Hepaticus, Mastomyrinus, Rodentium, Typhlonius)*	rtPCR	✓	✓	✓			LA / F / E
Klebsiella pneumoniae	Culture / rtPCR	✓	✓	✓	✓		LA / F / E
Klebsiella oxytoca	Culture / rtPCR	✓	✓	✓			LA / F / E
Lawsonia intracellularis	rtPCR			✓			LA / F / E
M pulmonis [1,2]	MFIA / ELISA / rtPCR	✓	✓				LA / S / DBS / F / E / OS
Mycoplasma spp. [1,2]	rtPCR	✓	✓				LA / S / DBS / F / E / OS
Pasteurella multocida [5]	Culture / rtPCR			✓		✓	LA / OS
Rodentibacter *heylii* [1,2,3]	Culture / rtPCR	✓	✓	✓	✓		LA / F / E / OS
Rodentibacter *pneumotropicus* [1,2,3]	Culture / rtPCR	✓	✓	✓	✓		LA / F / E / OS
Pneumocystis carinii [2]	IFA / rtPCR		✓				LA / S / DBS / F / E / OS
Pneumocystis murina	rtPCR	✓					LA / F / E / OS
Pseudomonas aeruginosa	Culture / rtPCR	✓	✓	✓	✓		LA / F / E
Proteus spp	Culture / rtPCR	✓	✓				LA / F / E
Proteus mirabilis	Culture / rtPCR	✓	✓				LA / F / E
Proteus vulgaris	Culture / rtPCR	✓	✓				LA / F / E
Salmonella spp. [1,2,3,4,5]	Culture / rtPCR	✓	✓	✓	✓	✓	LA / F / E
Staphylococcus aureus	Culture / rtPCR	✓	✓	✓	✓	✓	LA / F / E / OS / FS
Staphylococcus xylosus	Culture / rtPCR	✓	✓				LA / F / E / FS
Streptobacillus moniliformis [1,2,4]	rtPCR	✓	✓		✓		LA / F / E / OS
Streptococci Beta-haemolytic (Group A) [1,2,4]	Culture / rtPCR	✓	✓	✓	✓	✓	LA / F / E / OS
Streptococci Beta-haemolytic (Group B) [1,2,4]	Culture / rtPCR	✓	✓	✓	✓	✓	LA / F / E / OS
Streptococci Beta-haemolytic (Group C) [1,2,4]	Culture / rtPCR	✓	✓	✓	✓	✓	LA / F / E / OS
Streptococci Beta-haemolytic (Group G) [1,2,4]	Culture / rtPCR	✓	✓	✓	✓	✓	LA / F / E / OS
Streptococcus pneumoniae [1,2,4]	Culture / rtPCR	✓	✓		✓		LA / F / E / OS
Treponoma paraluiscuniculi	HAI					✓	LA / S / DBS
Yersinia pseudotuberculosis	Culture / rtPCR				✓		LA / F / E

(1) Mouse agents recommended by FELASA 2014 (quarterly and/or annual)
(2) Rat agents recommended by FELASA 2014 (quarterly and/or annual)
(3) Hamster agents recommended by FELASA 2014 (quarterly and/or annual)
(4) Guinea pig agents recommended by FELASA 2014 (quarterly and/or annual)
(5) Rabbit agents recommended by FELASA 2014 (quarterly and/or annual)

Sample type:

DBS: Dry Blood Spot
F: Fecal
FS: Fur Swab
E: Environmental material (filter, swabs, other)
LA: Live Animal
OS: Oral Swab
S: Serum

TO ORDER: refer to page 99

PARASITOLOGY

Parasitology is performed by direct microscopic examination, serology and rtPCR. The area around the ears, neck and inguinal region are evaluated for mites and lice, and the small intestinal and cecal contents are evaluated for pathogenic and non-pathogenic helminths and protozoa.

Serology is used to screen E. cuniculi. NSP test samples can be shipped to our laboratories to include swabs, faeces for use in rtPCR techniques. A special pinworm profile is available for rapid rtPCR testing.

POOLING

It is possible to pool samples when testing for parasites. We recommend no more than five (5) fur swab samples, but can accept pools up to 10. Environmental samples, as well as fecal samples for rt-PCR, can be tested up to a maximum of ten (10) into one single sample, and no more than ten (10) faecal and environmental samples for use in rtPCR testing.

PARASITOLOGY	TEST METHOD (RTPCR ONLY FOR MOUSE/RAT)	MOUSE	RAT	HAMSTER[3]	G. PIG[3]	RABBIT[3]	SAMPLE TYPE (CAN BE SPECIE SPECIFIC)
Ectoparasites (Mites) [1,2]							
Myocoptes musculinus	Microscope / rtPCR	✓	✓				LA / E / FS
Myobia musculi / Radfordia	Microscope / rtPCR	✓	✓				LA / F / E / FS
Demodex	rtPCR	✓	✓				F / E / FS
Endoparasites [1,2]							
Aspiculuris tetraptera	Microscope / rtPCR	✓	✓				LA / F / E
Chilomastix spp	Microscope / rtPCR	✓	✓				LA / F / E
Cryptosporidium spp	rtPCR	✓	✓				F / E
Eimeria spp	Microscope / rtPCR	✓	✓				LA / F / E
Entamoeba Histolytica	rtPCR	✓	✓				F / E
Entamoeba muris	Microscope / rtPCR	✓	✓				LA / F / E
Entamoeba spp	rtPCR						F / E
Giardia muris	Microscope / rtPCR	✓	✓				LA / F / E
Giardia spp	Microscope / rtPCR	✓	✓				F / E
Passalurus ambiguus	rtPCR	✓	✓				F / E
Syphacia obvelata	Microscope / rtPCR	✓	✓				LA / F / E
Syphacia muris	Microscope / rtPCR	✓	✓				LA / F / E
Spironucleus muris	Microscope / rtPCR	✓	✓				LA / F / E
Tritrichomonas muris	Microscope / rtPCR	✓	✓				LA / F / E
Trichomonas spp	Microscope / rtPCR	✓	✓				LA / F / E
Encephalitozoon cuniculi	ELISA / rtPCR	✓	✓				LA / S / DBS / F / E

(1) Mouse agents recommended by FELASA 2014 (quarterly and/or annual)
(2) Rat agents recommended by FELASA 2014 (quarterly and/or annual)
(3) Please refer to the specie specific agents recommended by FELASA 2014 (quarterly and/or annual)"

Sample type:

DBS: Dry Blood Spot
F: Fecal
FS: Fur Swab
E: Environmental material (filter, swabs, other)
LA: Live Animal
OS: Oral Swab
S: Serum

PATHOLOGY

Tissues and organs are taken if abnormalities are observed during routine necropsy. These can be submitted for histopathology upon request at an additional charge.

NSP SAMPLING KITS

Inotiv has created an NSP sampling kit to improve the reliability and simplify the collection and submission of samples. Included in the box are sample collection, storage and transportation media, user-friendly sampling submission forms (profiles, species, strain etc.), sampling and packing instructions and pre-printed shipping instructions.
These materials are being provided free of charge in conjunction with purchase of tests. Inotiv offers on-site sample training which may be subject to additional charges

ANIMAL TRANSPORTATION

Inotiv is equipped to provide animal shipping solutions for customers upon request. This includes the provision of live sentinel animals at SOPF status (bred and maintained in isolator), filtered shipping boxes including agar gel, pick up service of live animals in climate controlled vehicles, and user-friendly submission forms (profiles, species, strain etc.)

TESTING OF BIOLOGICAL MATERIALS

Biological materials such as tumours, hybridomas, cell lines and blood products can be contaminated when they are sourced from contaminated animals. Introduction of these materials into the animal unit is therefore subject to risk. Inotiv offers procedures and testing methods for animal sourced materials. Please contact our technical specialists for additional information.

REPORTING

Inotiv uses the Laboratory Information Management System (LIMS) to track, collate and report on Health Monitoring tests. Each submission receives a unique reference number, which then covers all samples within that submission.

Inotiv's FELASA compliant report is normally provided within 7 working days. Single serology or rtPCR testing results can be provided within 72 hours after receipt at our laboratory. Where conflicting or unexpected positive results are found, customers are informed immediately and appropriate action / follow up testing agreed.

For static areas we can include historical data from the last 18 months into the final report.

TO ORDER: refer to page 99

CELL LINE AND BIOLOGICS TESTING FOR RODENT PATHOGENS

Mouse profiles

	NSP CELLS I (22 AGENTS)	NSP CELLS II (18 AGENTS)	NSP CELLS IIII (15 AGENTS)	NSP CELLS IV (8 AGENTS)
Minute Virus of Mice (MVM)	X	X	X	X
Mouse Hepatitis Virus (MHV)	X	X	X	X
Mouse Parvovirus (MPV-1, MPV-2)	X	X	X	X
Mycoplasma pulmonis	X	X	X	X
Mycoplasma spp	X	X	X	X
Pneumonia Virus of Mice (PVM)	X	X	X	X
Sendai virus	X	X	X	X
Theiler's Murine Encephalomyelitis Virus (TMEV)	X	X	X	X
Ectromelia virus	X	X	X	
Lactate Dehydrogenase-Elevating virus (LDEV)	X	X	X	
Lymphocytic Choriomeningitis Virus (LCMV)	X	X	X	
Mouse Polyomavirus	X	X	X	
Mouse Norovirus (MNV)	X	X	X	
Mouse Rotavirus (EDIM)	X	X	X	
Respiratory enteric virus (Reovirus type 3)	X	X	X	
Mouse Adenovirus (FL)	X	X		
Mouse Adenovirus (K87)	X	X		
Mouse Cytomegalo virus (MCMV)	X	X		
Mouse K virus	X	X		
Hantaan virus (includes Seoul and Sin Nombre strains)	X			

Rat profiles

	NSP CELLS V (17 AGENTS)	NSP CELLS VI (10 AGENTS)
Kilham Rat Virus (KRV)	X	X
Lymphocytic Choriomeningitis virus (LCMV)	X	X
Mycoplasma pulmonis	X	X
Mycoplasma spp	X	X
Pneumonia Virus of Mice (PVM)	X	X
Rat Minute virus (RMV)	X	X
Rat Parvovirus (RPV, type 1 and 2)	X	X
Sendai Virus	X	X
Sialodacryoadenitis / Corona virus (SDAV)	X	X
Toolan H1 Parvovirus	X	X
Hantaan Virus (includes Seoul and Sin Nombre strains)	X	
Mouse Adenovirus (FL))	X	
Mouse Adenovirus (K87)	X	
Rat Theilo Virus (RTV)	X	
Respiratory enteric virus (Reovirus type 3)	X	

- For biological or cell culture samples, send one cryovial for each sample containing a minimum of $1x10^6$-$1x10^7$ cells/vial. Cells can be in the form of a pellet or suspended in growth media or phosphate-buffered saline.
- For liquid samples, send one cryovial of each sample containing 0,5 ml of sample/vial.
- Smaller volumes of sample may also be evaluated if limited amounts of the sample are available. Please contact us prior to shipping.
- Material should be collected aseptically to prevent inadvertent contamination of samples.
- Samples should be frozen and shipped overnight with sufficient dry ice to ensure the samples remain frozen during transit and upon arrival.
- Please inquire for additional testing options and agents.

Additional profiles for mouse, rats and other species are available on request. Contact **healthmonitorlab@inotivco.com** or your local account manager/ Customer Service Department.

TO ORDER: refer to page 99

CANINE DIAGNOSTIC TESTING SERVICES

Inotiv offers a series of diagnostic testing services in accordance with FELASA recommendation for the health monitoring of canines.

All processing and reporting are conducted with the same processes, integrity and quality assurance as our other testing services. A panel of available tests by species type is listed below. Limited non-sacrificial panel (NSP) sampling kits are available for serology and feces collection. Please contact us for more information.

Testing services are available for individual agents or panel tests and include bacteriology, virology and parasitology. Per FELASA guidelines, the number and type of agents to be monitored will vary from country to country and region to region. Infectious diseases that do not need to monitored are those declared to be absent within a region and diseases in which the animals are vaccinated.

Sampling frequency is recommended every 3 months beginning at weanling age, testing the agents listed below. Exceptions are also noted below.

Viral agents to be monitored on request or when associated with lesions or clinical disease.+

VIRUSES	TEST METHOD	SAMPLE TYPE
Canine adenovirus type 1 (HCC)	ELISA	S/DBS
Canine distemper virus (CDV)	ELISA	S/DBS
Canine parainfluenza virus (CPIV)	ELISA	S/DBS
Canine parvovirus (CPV)	ELISA	S/DBS
Intestinal coronavirus	ELISA	S/DBS
Rotavirus	ELISA	S/DBS

Recommended list of bacterial agents to be monitored.

BACTERIA	TEST METHOD	SAMPLE TYPE
Bordetella bronchiseptica	Culture/rtPCR	F/E
Borrelia spp.	Antigenic	DBS
Brucella canis	Culture	F/E
Leptospira spp.	MAT	S
Salmonella spp.	Culture/rtPCR	F/E
Streptococci beta-hemolytic, serogroup G	Culture/rtPCR	F/E

Bacterial and fungal agents to be monitored on request or when associated with lesions or clinical disease.+

BACTERIA	TEST METHOD	SAMPLE TYPE
Campylobacter spp.	Culture	F/E
Ehrlichia spp.	Antigenic	S/DBS
Escherichia coli	Culture	F/E
Microsporum spp.	Culture	F/E
Pasteurellaceae spp.	Culture	F/E
Staphylococcus spp.	Culture	F/E
Trichophyton spp.	Culture	F/E
Yersinia enterocolita	Culture	F/E

+ Please consult your local authority along with vaccination and deworming documents to determine which agents are to be monitored for your colony.

TO ORDER: refer to page 99

Recommended list of parasites to be monitored.

PARASITES*	TEST METHOD	SAMPLE TYPE
All arthropods	Microscopy	F
All helminths	Microscopy	F
Coccidiae	Microscopy/rtPCR	F/E
Giardia spp.	Antigenic	F
Mycoplasma haemocanis (formerly Haemobartonella canis)	Microscopy	Blood Smear

Parasites to be monitored on request or when associated with disease.+

PARASITES*	TEST METHOD	SAMPLE TYPE
Angiostrongylus vasorum	Antigenic	S/DBS
Babesia spp.	Antigenic	S/DBS
Dipetalonema reconditum	Antigenic	S/DBS
Dirofilaria immitis	Antigenic	S/DBS
Filaroides spp.	Antigenic	S/DBS
Leishmania spp.	Serology	S
Pneumonyssus caninum	Necropsy	Tissue

\+ Please consult your local authority along with vaccination and deworming documents to determine which agents are to be monitored for your colony.
* Ectoparasites - Attention should be given to ectoparasites such as fleas, lice, ticks and mites, including after using an ectoparasiticide.

SAMPLE TYPE AND COLLECTION:

Serology (S) sample collection - Minimum volume required 300ul-500ul undiluted serum sample in Eppendorf tube or serum tube. Refrigerate or freeze prior to shipping. Ship either with dry ice or ice packs to maintain temperature throughout shipping. Ship for next day delivery.

Dry blood spot (DBS) - collection - Spot 4 drops directly on the circle printed on the card. Please use 1 card per animal. After air-drying, the card is placed in a sample bag together with the desiccant and submitted to our lab. No refrigeration or sample preparation is needed.

Fecal (F) - Please collect approximately 5g of fresh fecal material and place in stool containers. Fecal samples can be kept at 4C and shipped with cool packs.

Environmental (E) collection - Sampling of environment is available with submission of filters, swabs or other.

Blood Smear - Please contact us for collection and shipping protocol.

Tissue - Please contact us for collection and shipping protocol.

Please contact us regarding our other testing capabilities at **healthmonitorlab@inotivco.com** or visit us at **inotivco.com/full-spectrum-health-monitoring**

TO ORDER: refer to page 99

NONHUMAN PRIMATE

Inotiv offers a series of diagnostic testing services in accordance with FELASA recommendations for the health monitoring of nonhuman primates. Testing services are available for individual agents or panel tests and include bacteriology, virology and parasitology.

All processing and reporting are conducted with the same processes, integrity and quality assurance as our other testing services. A panel of available tests by species type is listed below.

Limited NSP sampling kits are available for serology and feces collection. Please contact us for more information.

Inotiv nonhuman primate testing panels and agents

VIRUSES	TEST METHOD	MACAQUE	BABOONS	NEW WORLD	SAMPLE TYPE
B Virus+	rtPCR/IFA	R,A			S/DBS/B
Coronavirus (COVID-19)	rtPCR				S/DBS/B
Filovirus (Ebola)+	ELISA	R			S/DBS
Measles +	ELISA	R,A			S/DBS
Mumps*	ELISA				S/DBS
Rabies+	ELISA	R	R	R	S/DBS
Simian anti-poliomyelitis I-II-III*	ELISA				S/DBS
Simian Dengue*	ELISA				S/DBS
Simian immunodeficiency virus (SIV)+	rtPCR/IFA	R	R		S/DBS/B
Simian retrovirus (SRV)+	rtPCR/IFA	R	R		S/DBS/B
Simian rubella*	ELISA				S/DBS
Simian T-lymphotropic virus (STLV)+	rtPCR/IFA	R	R		S/DBS
Simian toxoplasma*	ELISA				S/DBS
Varicella zoster*	ELISA				S/DBS
Yellow fever*	ELISA				S/DBS
BACTERIA					
Mycobacterium **	Culture/rtPCR	**	**	**	**
Salmonella spp+	Culture/rtPCR	R,A	R,A	R,A	F/E
Shigella spp+	Culture	R,A	R,A	R,A	F/E
Yersinia spp+	rtPCR	R,A	R,A		F/E
PARASITES					
Entamoeba histolytica+	Microscopy/rtPCR	R,A	R,A	R,A	F/E
Giardia spp.+	Microscopy/rtPCR	R,A	R,A	R,A	F/E
Helminths+	Microscopy	R,A	R,A	R,A	F/E

\+ Simian agents recommended by FELASA 2019 for macaques, baboons and new world primates including frequency - [R] = upon arrival, [A] = annually
* Testing available upon request. Please notify the lab 15 days prior to shipment of samples.
** *Mycobacterium tuberculosis* skin testing is performed at NHP facility. Contact us for more information regarding additional testing.

SAMPLE TYPE AND COLLECTION:

Serology (S) - Minimum volume required 100ul-300ul undiluted serum sample in Eppendorf tube or serum tube. Refrigerate or freeze prior to shipping. Ship either with dry ice or ice packs to maintain temperature throughout shipping. Ship for next day delivery.

Dry blood spot (DBS) - Spot 4 drops directly on the circle printed on the card. Please use 1 card per animal. After air-drying, the card is placed in a sample bag together with the desiccant and submitted to our lab. No refrigeration or sample preparation is needed.

Fecal (F) - Please collect approximately 5g of fresh fecal material collected in stool containers. Fecal samples can be kept at 4°C and shipped with cool packs.

Environmental (E) - Sampling of environment is available with submission of filters, swabs, or other.

Blood (B) - 0.5ml whole blood , in EDTA frozen and shipped with dry ice.

Please contact us regarding these or any of our other testing capabilities at **healthmonitorlab@inotivco.com** or visit us at **inotivco.com**

TO ORDER: refer to page 99

Recommended sampling frequency is every 6 months.

ZEBRAFISH DIAGNOSTIC TESTING SERVICE

Inotiv offers multiple diagnostic health monitoring panels for zebrafish colonies, water and environmental samples. Testing services are available for individual agents or as a full panel. All processing and reporting are conducted with the same processes, integrity and quality assurance as our other testing services. Limited sampling kits are available for environmental and water testing. Please contact us for more information.

Zebrafish Testing Panels*

AGENT	MYCOBACTERIUM PANEL*	ZEBRAFISH PANEL I*	ZEBRAFISH PANEL II*	ZEBRAFISH MICROBIOLOGY PANEL+
Mycobacterium spp.	X	X	X	
Mycobacterium abscessus	X	X	X	
Mycobacterium chelonae	X	X	X	
Mycobacterium fortuitum	X	X	X	
Mycobacterium gordonae	X	X	X	
Mycobacterium haemophilum	X	X	X	
Mycobacterium marinum	X	X	X	
Mycobacterium peregrinum	X	X	X	
Mycobacterium saopaulense	X	X	X	
BACTERIA, FUNGI AND PARASITES				
Aeromonas hydrophila			X	X
Edwardsiella ictaluri		X	X	X
Flavobacterium columnare			X	X
Ichthyophthirius multifiliis			X	
Piscinoodinium pillulare			X	
Pleistophora hyphessobryconis			X	
Plesiomonas shigelloides				X
Pseudocapillaria tomentosa			X	
Pseudoloma neurophilia		X	X	
Pseudomonas aeruginosa		X	X	X
Pseudomonas fluorescens				X
Saprolegnia spp.			X	
VIRUSES				
Infectious spleen and kidneynecrosis virus (ISKNV)			X	
Infectious pancreatic necrosis virus (IPNV)			X	
Zebrafish picornavirus (ZfPV-1)			X	

* qPCR testing will be performed on the following sample types: frozen fish or embryos, environmental sample, water, InterZebTEC (patent pending).
\+ Microbiology testing methods will be performed on water samples.

SAMPLE TYPE, COLLECTION AND SHIPMENT:

Zebrafish or Zebrafish embryos (FF) - A maximum of 5 fish can be pooled into one tube and tested as one sample. Pooling fish of different health statuses or across different systems is not recommended. Single fish can be placed into a 2ml labelled tube for a single test, up to 5 fish into a 50ml tube for pooled samples. Please freeze fish and/or embryos prior to shipping. Ship with dry ice or ice packs to maintain temperature throughout shipping.

Environmental samples (ES) - For all environmental sampling types, we recommend the use of a polystyrene transport boxes containing cold packs or dry ice as noted below. Most samples should not be frozen; live feed is the exception.

Environmental samples could include one or more of the following:

a) **Detritus:** Rub a dry flocked swab on the biofilm or sediment to collect detritus. Once collected, cut the head of the swab into a 2ml labelled tube and submit. Refrigerate and ship with ice packs.

b) **Fish feces:** Collect fish feces into a 2ml labelled tube and submit. Pooled feces from different fish collected in the same tube can be tested as a single sample. Pooling feces of fish with different health statuses or across different systems is not recommended.

c) **Live feed (e.g., Artemia):** Collect at least 1ml of live feed cultures in appropriate sized tube and ship frozen with dry ice or ice packs to maintain temperature throughout shipping.

Water (W):
Using a sterile 50ml syringe (without needle) collect ~50ml of water and transfer into a labelled falcon tube closedtightly to avoid leaks. Ship water samples with ice packs.

InterZebTEC (patent pending) (IZ):
If using this system, expose the InterZebTEC for 5-7 weeks. At the end of the exposure time transfer the system of filters into a 50 ml labelled tube and ship with ice packs. This system is designed to reliably collect biological samples, including debris and biofilm. InterZebTEC can be shipped at room temperature.

We recommend next day delivery for all sample types.
Contact us for more information on storage prior to shipping.

TO ORDER: refer to page 99

Xenopus Testing Panels*

AGENT	SAMPLE TYPE	XENOPUS PANEL I	XENOPUS PANEL II
Batrachochytrium dendrobatidis	ventral skin	X	X
Mycobacterium chelonae	E, swab os lesion, kidney, liver	X	X
Mycobacterium marinum	E, swab os lesion, kidney, liver	X	X
Pseudocapillaroides xenopi	dorsal skin swab	X	X
Ranavirus spp.	E, SS, OS, T	X	X
Aeromonas hydrophila	F, SS, T, E		X
Cryptosporidium spp.	F		X
Pseudomonas aeruginosa	F, swab of lesion		X
Salmonella spp	F		X
Saprolegnia spp.	F, SS, T, E		X
MICROBIOLOGY PANEL			
Aeromonas dhakensis	F, SS, E	X	
Aeromonas hydrophila	F, SS, E	X	
Elizabethkingia meningoseptica	F, SS, E	X	
Pseudomonas aeruginosa	F, SS, E	X	
Salmonella enterica	F, E	X	
Saprolegnia spp.	F, SS, E	X	

* qPCR testing will be performed on the following sample types: frozen fish or embryos, environmental sample, water, InterZebTEC (patent pending).
\+ Microbiology testing methods will be performed on water samples.

SAMPLE TYPE, COLLECTION AND SHIPMENT:

TISSUE SAMPLE (TS) OR TADPOLES (td)- All tissues should be submitted as a separate and single sample. Single tissues or tadpoles can be placed into a 2ml labelled tube. Please freeze prior to shipping. Ship with dry ice or ice packs to maintain temperature throughout shipping.

Environmental samples (ES) - For all environmental sampling types, we recommend the use of a polystyrene transport boxes containing cold packs or dry ice as noted below. Most samples should not be frozen; live feed is the exception.

Environmental samples could include one or more of the following:

a) **Detritus:** Rub a dry flocked swab on the biofilm or sediment to collect detritus. Once collected, cut the head of the swab into a 2ml labelled tube and submit. Refrigerate and ship with ice packs.

b) **Animal feces:** Collect frog feces into a 2ml labelled tube and submit. Pooled feces from different frogs collected in the same tube can be tested as a single sample. Pooling feces of frogs with different health statuses or across different systems is not recommended.

Water (W): Using a sterile 50ml syringe (without needle) collect ~50ml of water and transfer into a labelled falcon tube closedtightly to avoid leaks. Ship water samples with ice packs.

Skin and Olar swab (SS OR OS): Rub a dry flocked swab on the skin, oral cavity, gills (tadpoles) or lesioned areas and organs and submit in a culture tube including transport medium such as Amies Medium without charcoal, and shipped with cold packs.

We recommend next day delivery for all sample types.
Contact us for more information on storage prior to shipping.

Please contact us regarding these or any of our other testing capabilities at **healthmonitorlab@inotivco.com** or visit us at **inotivco.com**

TO ORDER: refer to page 99

Discovery and Safety Assessment Portfolio

EXPECT MORE FROM YOUR DISCOVERY AND DEVELOPMENT CRO

Gain the insights you deserve to get the answers you need

Answering the right questions on time and with high-quality data is the key to achieving your objectives. At Inotiv, clinical decision support is our focus: We deliver the comprehensive and integrated range of right-sized *in vivo*, *in vitro*, and *in silico* services, analytical, bioanalysis, DMPK, and consulting solutions essential to your success. Take advantage of our long and impeccable regulatory history, world-class team of scientists, and track record of providing attentive, decisive service.

IN VITRO AND *IN VIVO* SERVICES

Discovery

- Pharmacology and toxicology assessment
- Drug metabolism and pharmacokinetics
- Pharmacology/pharmacodynamic model co-development
- Toxicogenomics
- Computational toxicology

Regulatory-enabling safety assessment

- Acute through chronic GLP toxicology with toxicokinetics
- Safety pharmacology
- Genetic toxicology
- Carcinogenicity studies including transgenic mice
- Developmental and reproductive toxicology including juvenile animal studies
- Program management to keep your project on schedule and on budget

DMPK

- *In vitro* metabolism and PK screening
- Metabolite ID, soft spot analysis
- In vitro drug-drug interactions (CYP and transporters)
- PK/TK analysis

HISTOLOGY AND PATHOLOGY

- Standalone or fully integrated with in vivo services
- Discovery through regulated toxicologic pathology
- Primary evaluations and peer reviews
- Board-certified pathologists (ACVP)
- Pharmacologic, clinical, medical device, and digital pathology
- Immunohistochemistry and immunofluorescence, *in situ* hybridization, quantitative microscopy, image analysis, stereology, histomorphometry, and specialty stains

SURGICAL MODELS AND MEDICAL DEVICE TESTING

- GLP and non-GLP in vivo testing
- Broad portfolio of techniques
- Trained veterinary surgeons
- Multiple surgical suites
- State-of-the-art imaging

BIOANALYSIS

- Phase-appropriate discovery method validation
- Regulatory enabling (GLP, GCP) method development, validation, and transfer
- Clinical/nonclinical studies supporting safety and efficacy
- Nonclinical and clinical fluids and tissues
- Dose formulation analysis

Small molecule

- AB SCIEX™ LC-MS/MS platform (small molecule, peptides, oligonucleotides)
- High-resolution mass spectrometry (HRMS)
- Liquid handling and assay automation

Biotherapeutics

- Peptide/protein therapeutics, monoclonal antibodies, cell, and gene therapies, and ADCs (PK and immunogenicity)
- Molecular biology (DNA/RNA/proteins)
- Cytokine panels (inflammatory markers)
- Flow cytometry (immunophenotyping)
- Pharmacokinetic (PK), toxicokinetic, and immunogenicity (ADA and Nab) assessments
- Ligand binding assay (ELISA, ELISpot, MSD, BioPlex™, and Luminex®)
- Biomarkers for single and multiplex assay

Contact us for more details at
DDinfo@inotivco.com

TO ORDER: refer to page 99

Inotiv genetic testing services

The Inotiv genetic services operations in North America provide global DNA and RNA analysis services. Inotiv has partnered with Transnetyx to offer a range of quality genetic testing services. This partnership allows access to experts in genetics and genotyping.

FEATURES

DNA/Mutation Analyses – investigate the structure of the genetic variation in your model with the following services:

- Genotyping
- Zygosity Testing
- SNP Profiling for Speed Congenics

RNA/Expression Analyses – investigate the expression of the gene or genes of interest in your model with the following services:

- Quantitative PCR (qPCR)

ADVANTAGES

- Offers customized testing for maximum flexibility and value
- Supports your project with technical and bioinformatics specialists
- Provides experimental design consultation
- Delivers quick turnaround times
- Archives data securely for up to five years

Contact your Inotiv representative or visit **inotivco.com**

TO ORDER: refer to page 99

Biospecimen products and services

Inotiv's Biospecimen Services provides a comprehensive range of consistent, high-quality biospecimen products to supplement your research. As the provider of the broadest range of standard research models to the pharmaceutical and biotechnology industries, government, academia and other life science organizations, Inotiv is able to provide access to both fresh and frozen products from a wide range of Inotiv bred laboratory animals and farm animals.

As part of Inotiv's commitment as a responsible breeder to follow the principles of the 3Rs, surplus animals from our commercially bred stock are used to produce stock biological products. Standard diets, genetic integrity assurance and consistent bio-security and health care programs minimize lot to lot variation.

For stock product specifications visit our website **inotivco.com.**

Biospecimen (Prices on request)

DESCRIPTION/SPECIES	MOUSE	RAT	G.PIG	RABBIT	CHICKEN	TURKEY	DOG
Serum	✓	✓	✓	✓	✓	✓	✓
Strain specific serum (outbred)	✓	✓					
Strain specific serum (other)	✓	✓					
Serum from isolator reared rodents	✓	✓					
Plasma	✓	✓	✓	✓	✓	✓	✓
Strain specific plasma (outbred)	✓	✓					
Strain specific plasma (other)	✓	✓					
Plasma from isolator reared rodents	✓	✓					
Complement	✓	✓	✓	✓			
Blood (Cells) in Alsever	✓	✓	✓	✓	✓	✓	✓
Whole Blood (outbred / inbred)	✓	✓	✓	✓	✓	✓	✓
Whole Blood from isolator reared rodents	✓	✓					
Tissues - Organs - Glands (TOG's)	Prices on request. Contact biologicals.eu@inotivco.com						

- Pricing is based on availability of surplus animals and excludes packaging (dry ice) and (courier) delivery.
- Standard anticoagulants used are EDTA and Lithium Heparin. Others available upon request.

Surcharges apply to:
- Individual samples
- Specific packing requirements (vial sizes)
- Gender specific samples
- Samples at specific animal age

Require a custom product bespoke to your specifications?

Contact **biologicals.eu@inotivco.com** to discuss your requirements and receive a quote.

Please note: For the collection of biological products at our UK facility, a scientific justification must be submitted upon placement of an order.

For assistance please contact your customer service representative or **biologicals.eu@inotivco.com** who will be happy to provide the relevant form.

TO ORDER: refer to page 99

Import and export transport services

Inotiv has been providing a comprehensive import and export service for the shipment of animals, embryos or other products to the research industry in the EU and worldwide for over 30 years on behalf of Academia, Pharmaceutical and Contract Research companies.

As a company, we aim to provide a full service tailored to suit your individual needs. With offices in the UK, Europe, and America, we are able to offer support from our Inotiv colleagues, as well as using approved agents worldwide.

We provide a door-to-door service to our clients, liaising with all parties over the purchase (if applicable), supply, and direct shipment of animals being imported or exported from your facility or any third party to the Inotiv facilities in Leicestershire UK, or located locally, where we provide project maintenance in our contract breeding department, embryo transfer, rederivation and cryopreservation services.

Inotiv has relationships with many Institutions and are able to liaise with suppliers on your behalf. If appropriate our service can include the purchase and supply of all your animal requirements, thus ensuring one final invoice to yourselves.

The Inotiv Import Service in UK is applicable to either importation under the Rabies (Importation of dogs, cats, and other mammals) Order 1974 (as amended) or Article 4 of the EEC Council Directive 92/65, dependent upon whether the supplier is registered to export under the UK Directive.

Our service includes:

- Assistance with all necessary arrangements regarding collection of the animals, embryos or other products from the supplier and shipping to the UK/EU. This includes completion of all documentation required to accompany the animals (e.g. Shippers Certification, Airwaybill, Invoice, Veterinary certificate and address labels).
- Supply of IATA approved export shipping containers complete with woodchips, diet mash or gel packs and shipping labels.
- Obtaining DEFRA Import license, if appropriate.
- Arranging customs clearance at the arrival airport and delivery to the receiving facility in an appropriate approved, temperature controlled vehicle.
- Costs additional to the Import Service which may be charged by the supplier include:
  - Animal costs
  - Shipping Container charge
  - Export documentation/Vet Fees
  - Air Freight

Inotiv is able to organize the export of animals from facilities in the EU worldwide. Certain countries may need additional documentation e.g. Import Permits, Health Certificates, TRACES certification, Certificate of Origin etc. Advice on their requirement will be given, if appropriate.

This service includes:

- Liaison with the recipient on your behalf on shipment of your animals, embryos and other products, including invoicing all costs incurred to the recipient, if appropriate and/or payment of Airline handling charges and air freight on your behalf.
- Supply of IATA approved export shipping containers complete with woodchips, diet mash or gel packs, and shipping labels
- Completion of all documentation required to accompany the animals e.g. (DEFRA) Export Health Certificate, Shippers Certification, Airwaybill, Invoice and address labels.
- Arranging for Veterinary Inspection within your facility, prior to shipment, if required.
- Forwarding of all necessary documentation and flight details to the recipient.
- Collection of your animals in a dedicated, temperature controlled vehicle and delivery to the departure airport.
- Customs clearance at arrival airport, transport in a temperature controlled vehicle to the recipient's facility.
- Confirmation back to shipper of safe arrival of animals.

TRANSFER SERVICE

Inotiv also offers a road transport service to move animals, embryos and other products between establishments within the EU in our fleet of approved temperature controlled vehicles. We can also provide a range of IATA approved shipping containers complete with woodchips and mash/gel packs.

IMPORT OR EXPORT OF EMBRYOS/CELLS WORLDWIDE

- Hire of Embryo Transfer chamber (dry shipper) fully charged with liquid nitrogen and ship worldwide
- For import of embryos/cells we will organize for the fully charged empty Embryo Transfer Chamber to be delivered to the shipper, for immediate collection of embryos/cells and return to the recipient.
- For export of embryos/cells we will organize for the fully charged empty Embryo Transfer Chamber to be delivered to the recipient for immediate collection and shipment to recipient and then arrange for return of the empty chamber.

For additional information or a formal quotation, please contact your local account manager or Customer service center.

TO ORDER: refer to page 99

Surgical services

Inotiv's state-of-the-art surgical facilities are dedicated to providing the highest quality surgical models to our customers from our advanced surgery center and our barrier-dedicated surgical facilities. We are committed to enhancing and enriching your research, through quality, collaboration, development, and animal welfare.

Under close veterinary supervision, our AAALAC accredited facilities offer multiple rodent surgical models from experienced and highly-trained, certified surgical technicians.

Inotiv offers many standard surgical models and has the flexibility to collaborate with customers to create custom surgical models from third-party or Inotiv-bred models.

Contact us to discuss your surgical model needs.

TO ORDER: refer to page 99

Surgical services

Quality

- Consistent quality across all surgical facilities
- Continuous training, evaluation and certification for all surgical personnel
- Client feedback is documented and reviewed by a team consisting of Quality, Veterinary Sciences, and Surgical Management
- Innovative software system to track and monitor surgical model development

Development

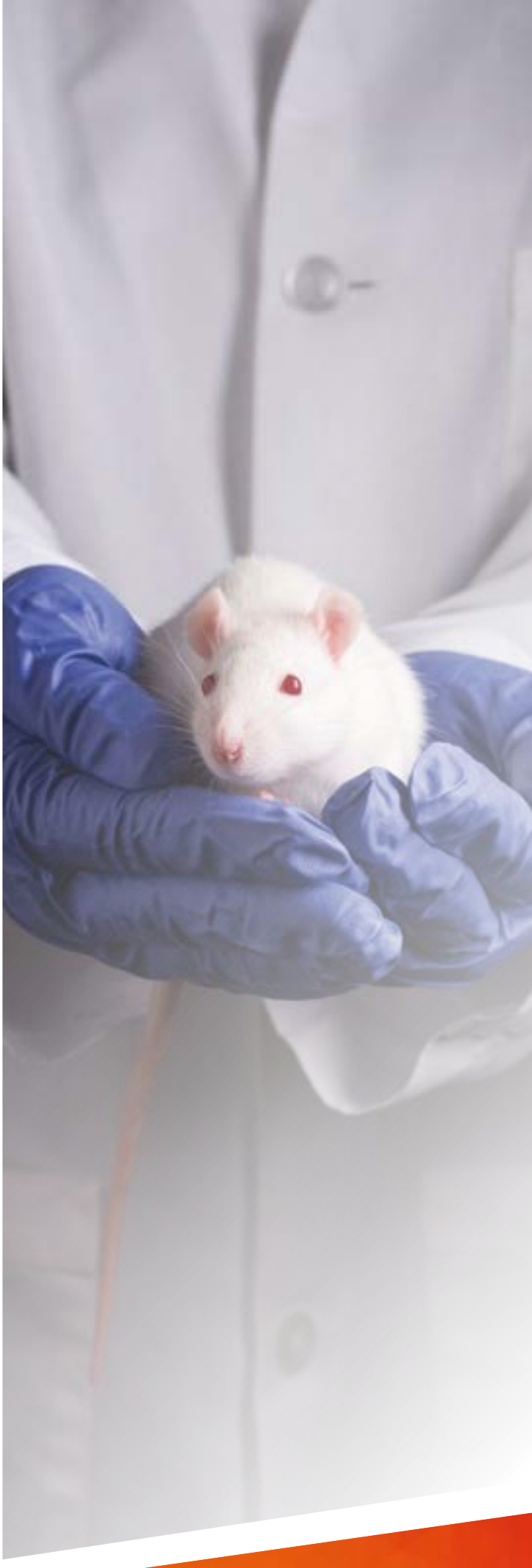
- Working with researchers to develop new surgical models and improve current models
- Commitment to continuing education opportunities for Inotiv surgical staff
- Continuous investment in Inotiv surgical facilities
- Flexibility to conduct surgery on both third-party and Inotiv bred rodent models.

Collaboration

- Developing partnerships with clients to enhance their research outcomes
- Partnering with industry professionals to bring new products and services to the research community
- Global best practice sharing between all Inotiv surgical personnel

Animal welfare

- Dedicated to the humane and ethical care of research animals
- All surgical modifications are reviewed and approved by the Inotiv Animal Welfare Officer
- Inotiv veterinarians provide oversight and technical and professional support to all surgical personnel
- Utilizing Inotiv's experience and expertise adds consistency to your cohorts and may decrease animal usage



TO ORDER: refer to page 99

RODENT CATHETERIZATIONS

Inotiv uses a rounded-tip catheter made of medical-grade polyurethane for all standard vascular catheterizations. Our standard catheter exteriorization option is a fixed exteriorization of 2.5 cm of exposed catheter exiting between the animal's shoulder blades. We currently offer several additional exteriorization options to access catheterized vessels for infusion and/or sample withdrawal. Furthermore, we will meticulously collaborate with our clients to develop a catheter model that fulfills their particular research needs.

Catheter patency is verified by our surgical staff intra-operatively and again prior to the animals being placed in the shipping containers.

Our recommended flushing regimen can be found on the "Post-Operative Care Sheet for Catheterizations" (sent with each order and available at inotivco.com).

When our recommended flushing regimen is followed, vascular catheterized models are guaranteed patent up to the first five (5) days from arrival at your facility.

- For vascular catheterized rat models, patency of the rounded-tip catheter must be confirmed by the client within four (4) days following arrival at their facility
- For vascular catheterized mouse models, patency should be confirmed on the day of arrival to client's facility
- Non-vascular catheterized models are guaranteed patent upon the day of arrival

Rat catheterizations

		Up to 5 animals (per animal)	6 or more animals (per animal)
VASCULAR CATHETERIZATIONS			
Carotid Artery	CAC	€ 160,90	€ 156,30
Femoral Artery*	FAC	€ 256,50	€ 179,60
Femoral Vein	FVC	€ 242,50	€ 154,00
Jugular Vein	JVC	€ 198,30	€ 126,00
Portal Vein	PVC	€ 339,30	€ 244,90
NON-VASCULAR CATHETERIZATIONS			
Bile Duct - Closed Loop	BDCCL	€ 378,60	€ 268,80
Intestinal-Duodenal	IDC	€ 308,90	€ 222,80
Intestinal-Jejunal	IJC	€ 379,00	€ 274,00
Gastric	IGC	€ 281,00	€ 195,80
Intra-Colonic		€ 344,00	€ 255,40
Ileum*	ILC	€ 263,50	€ 258,80
Intra-Cecum	ICC	€ 284,50	€ 211,00
Intra-Thecal		€ 312,50	€ 269,40

* On certain animal models only

Pricing includes button with protection cap. For other options a surcharge my apply due to single housing.

For inquires on our large model surgical services, please contact us at RMSsurgical@inotivco.com

Mouse catheterizations

		Up to 5 animals (per animal)	6 or more animals (per animal)
VASCULAR CATHETERIZATIONS			
Carotid Artery	CAC	€ 228,60	€ 220,30
Jugular Vein	JVC	€ 172,60	€ 165,60
NON-VASCULAR CATHETERIZATIONS			
Intestinal-Duodenal*	IDC	€ 366,10	€ 347,40
Gastric	IGC	€ 219,20	€ 211,00
Intra-colonic		€ 258,80	€ 250,70
Ileum	ILC	€ 361,40	€ 349,70
Intra-Cecum	ICC	€ 214,50	€ 207,50

Surgical enrichment program

- All singly-housed surgically-modified rodents receive enrichment postoperatively and during transit
- All surgically-modified rodents are acclimated to ClearH_2O gel prior to shipment

All catheterizations can be performed using Instech's PinPort™ or SAI Catheter Access Ports™ for an additional charge of € 12,00 (to include the PinPort™ and injectors for use during surgery and shipping). See page 93 for pricing on injectors for flushing maintenance.

Multiple procedures - single animal

Multiple surgical procedures, including catheterizations, can be performed on a single animal. If you require an unlisted combination, including triples, pricing is provided upon request.

		Up to 5 animals (per animal)	6 or more animals (per animal)
DOUBLE VASCULAR CATHETERIZATIONS (RAT)			
Jugular Vein/Carotid Artery	JVC/CAC	€ 363,70	€ 253,10
Double Jugular Vein	JVC/JVC	€ 311,30	€ 223,90
Femoral Artery/Femoral Vein	FVC/FAC	€ 402,20	€ 300,80
Jugular Vein/Femoral Vein	JVC/FVC	€ 344,00	€ 251,90
Jugular Vein/Femoral Artery	JVC/FAC	€ 376,60	€ 274,00

Inotiv also performs client-specific surgical procedures. Please contact Veterinary Sciences, Research and Support, at VSRSEU@inotivco.com to discuss your specific needs. In most cases, a surgical procedure development fee is assessed and includes the provision of surgically-modified animals for evaluation.

TO ORDER: refer to page 99

Catheterizations options*

In addition to the standard catheterization procedure, Inotiv offers these options:

	PRICE PER ITEM
RAT HARNESSES	
Harness, single port	€ 80,50
Harness, dual port	€ 118,80
Harness, quad port	€ 153,30
Harness, dual port w/connector	€ 181,40
Harness, quad port w/connector	€ 221,00
Connector, dual/quad harness	€ 67,80
Quik Connect Harness, single port	€ 78,00
Harness, custom, dual port	€ 99,60
CULEX CATHETERS	
CAC	P.O.R.
FVC, short	P.O.R.
FAC	P.O.R.
JVC, short	P.O.R.
BDCCL	P.O.R.
PVC	P.O.R.
Culex Catheter SS Plug, 19g	P.O.R.
Culex BDCCL U-Tube Connector	P.O.R.
CATHETER BUTTONS	
Single Vascular Access Button, Rat	€ 66,40
Double Vascular Access Button, Mice / Rats / Hamsters / Guinea Pigs	€ 91,20
Triple Vascular Access Button, Mice / Rats / Hamsters / Guinea Pigs	€ 113,10
CATHETER PORTS	
Vascular Access Port, JVC	P.O.R.
Vascular Access Port, FVC	P.O.R.
Cannulock Ports	P.O.R.
MISCELLANEOUS	
Additional Catheter Tubing (per 30 cm)	P.O.R.
Blunt Needles	P.O.R.
Huber Needles	P.O.R.
Rat Jacket w/Pouch	P.O.R.
Cannula Plugs	P.O.R.
Catheter Couplers	P.O.R.
Hep/Gly Soln, sterile, 500 IU/mL, 10 mL bottle	P.O.R.
Pinports (set of 5)	P.O.R.

* Supplier partners include: Access™ Technologies, SAI Infusion Technologies, Inc., Instech Laboratories, Inc., Bioanalytical Systems, Inc. (BASi), Data Sciences International (DSI™), and Lomir Biomedical, Inc.

Additional information

Animals used for our surgical procedures, originate from Inotiv's rodent barriers. Animals from these barriers meet the FELASA Recommendations 2014 (Mähler *et al*); a separate health surveillance programme is carried out in our surgical units on a monthly basis. Recent Health Reports from the Inotiv surgical units can be obtained from our website (inotivco.com).

In order to fully monitor the successful recovery of animals from surgery, we allow approximately 5 days before shipping. An animal diary with the history of the peri-operative care and instructions for care taking of the animals (e.g. flushing the cannula's, special water substitutions etc) after delivery is included.

Surgical procedure prices are in addition to the cost of animals, shipping, and taxes. Sham operations are priced at 75 percent of the prices shown. No additional charges are assessed based upon the use of gas or injectable anesthesia.

Soft tissue surgical procedures

		Up to 5 animals (per animal)	6 or more animals (per animal)
REPRODUCTIVE			
Castration - rat	CAST-scrotal	€ 64,10	€ 35,00
Castration - mouse	CAST-scrotal	€ 67,70	€ 38,60
Ovariectomy - rat	OVX	P.O.R.	P.O.R.
Ovariectomy - mouse	OVX	P.O.R.	P.O.R.
Vasectomy - rat	VAS	€ 85,20	€ 49,00
Vasectomy - mouse	VAS	€ 87,50	€ 49,00
ENDOCRINE			
Adrenalectomy-Bilateral – rat		€ 51,40	€ 40,90
Adrenalectomy-Bilateral – mouse		€ 51,40	€ 40,90
ADDITIONAL			
Nephrectomy-Unilateral - rat	NEPHREX	€ 114,90	€ 64,80
Nephrectomy-Unilateral - mouse	NEPHREX	€ 120,90	€ 69,70
5/6 Nephrectomy - rat		€ 275,50	€ 253,40
5/6 Nephrectomy - mouse		€ 297,50	€ 275,50
CARDIOVASCULAR			
Telemetry - rat		P.O.R.	P.O.R.
Telemetry - mouse		P.O.R.	P.O.R.
Myocardial infarction - rat		P.O.R.	P.O.R.
Myocardial infarction - mouse		P.O.R.	P.O.R.
Transverse aortic constriction - rat		P.O.R.	P.O.R.
Transverse aortic constriction - mouse		P.O.R.	P.O.R.

Immunodeficient models

Surgical modification of immunodeficient rodents that are maintained in flexible-film isolators is also available. These surgical procedures are performed (in US) within surgical isolators or laminar flow cabinets.

		Up to 5 animals (per animal)	6 or more animals (per animal)
REPRODUCTIVE			
Castration - rat	CAST-Isolator rat	P.O.R.	P.O.R.
Castration - mouse	CAST-Isolator mice	P.O.R.	P.O.R.
Ovariectomy - rat		P.O.R.	P.O.R.
Ovariectomy - mouse	OVX-Isolator mice	P.O.R.	P.O.R.
Vasectomy - rat		P.O.R.	P.O.R.
Vasectomy - mouse		P.O.R.	P.O.R.

Additional charges

	Each
Custom surgeries not listed	Pricing available upon request

Cancellations must be received within five business days prior to the scheduled date of surgery. The date of surgery is indicated on the order confirmation. Surgical orders cancelled after the required 5 days notice will be subject to the cost of surgery and any unrecoverable cost such as, but not limited to, preconditioning, treatment and maintenance of the animal model.

TO ORDER: refer to page 99

Myocardial infarction model

In the mid 1990s, research concluded the rat model has many pathophysiological and clinical similarities as the human heart. Progression to heart failure is similar to human progression. Inotiv now offers a myocardial infarction rat model.

USES

- Identify molecular signaling mechanisms
- Evaluate therapeutic treatments
- Investigate disease combinations

CURRENT RESEARCH

Combination of models

- Diabetes and MI
- Obesity and MI
- MI and aging/sex (young, middle age and old)

INOTIV MI SURGICAL PERFORMANCE

Measurable success

- Less than 40% ejection fraction (EF) Ejection fraction (EF) is a measurement of the percentage of pumped blood leaving the heart
- Ensuring consistent study results with minimal deviation
- Able to run on treadmill
- Low ejection fraction deviations between animals
- Minimal adhesion
- No infection or lung damage
- Muscle damage

Rat myocardial infarction

- Severe blanching
- Thin anterior wall
- EF = 31%

BEATING EXPECTATIONS

The Inotiv difference

Consultative approach
High quality surgical models
Knowledgeable technical support
Responsive customer support

TO ORDER: refer to page 99

Custom antibody production

At Inotiv Bioproducts, we believe that when it comes to making antibodies, experience matters.

For more than 40 years, we have consistently provided the research community high-quality custom antibody production services. From the more traditional *in vivo* approach, to the leading-edge *in vitro* production method, to hybridoma development, Inotiv Bioproducts can tailor a program to meet your specific needs. Our technical staff will work with you to determine the best production approach for your research.

We understand the research process and how unexpected variability can negatively impact the quality and timeliness of results. Through our proven Quality Management System, our cGMP/OLAW-compliant and USDA-licensed facility, and our team of highly-qualified and experienced professionals, we provide antibody products and services that you can depend on to support and enhance your research. By providing consistent high-quality products and services in a timely manner, Inotiv Bioproducts helps you focus on your research, rather than on unwanted distractions.

IN VIVO PRODUCTION

For an economical approach, Inotiv Bioproducts offers monoclonal antibody production in our cGMP-compliant and AAALAC accredited facility. Our ready access to large numbers of high-quality, genetically-defined adventitious virus-free mice ensures a rapid turn-around time at a competitive price. We can also help maximize your yield time through our innovative Optimization Program.

TO ORDER: refer to page 99

Inotiv Bioproducts is a global market leader with **more than 40 years of experience** in developing, scaling up and purifying antibodies.

CELL LINE AND PROCESSING SERVICES

We have expanded our cell line and processing capabilities to offer a wider selection of services, thus helping you to complete your research more efficiently.

- Bioburden
- Mycoplasma cleanup
- Endotoxin
- Viability
- Sterility
- Cell weaning
- Subcloning
- Cell recovery
- Cell banking
- Cell line isotyping
- Cell line stability
- IgG testing

Our technical staff has extensive experience in microbiology, virology, cell biology, pathology, and lab animal medicine. This translates into reliability in knowing that your projects will be dealt with in a professional and timely manner.

THE BPS ADVANTAGE:

- ISO 9001-2015 and AAALAC accredited, cGMP-compliant facility
- OLAW Assurance
- USDA registered
- Expertise > 40 years
- Rapid turnaround time
- Scientific expertise
- Superior quality management system
- Vendor qualification expertise

IN VIVO (ASCITES) PRODUCTION

For an economical approach, Inotiv Bioproducts offers monoclonal antibody production as ascites in our AAALAC registered cGMP compliant facility. Our ready access to large numbers of high quality, genetically defined adventitious virus-free mice and rats ensures a rapid turnaround time at a competitive price. We can also help maximize your yield time through our innovative Optimization Program.

SERVICE	DESCRIPTION	CELL LINE	PRODUCTION TYPE	CAPACITY	ADVANTAGES
Optimization Program	• Different doses tested • Small to large run sizes	Hybridomas, NSO and SP2/0	BALB/c, Nude, SCID, and other species	Small to large scale (10mg-100g)	• Determine optimal cell dose • Allows maximal yield • Verifies specifications • Saves time
Research *in vivo* Production (non-cGMP)	• When cGMP is not needed • Unique service • Same phases as cGMP	Hybridomas, NSO and SP2/0	BALB/c, Nude, SCID, and other species	Small to large scale (10mg-100g)	• No MAP Testing requirement • Quicker turn-around time • Custom protocols • Reduced cost
cGMP Production	• Diagnostic/Therapeutic Use • Extensive Quality Program • Fully tested	Hybridomas, NSO and SP2/0	BALB/c, Nude, SCID, and other species	Small to large scale (10mg-100g)	• AAALAC accredited, cGMP compliant • Optimized production • Large animal inventory • Complete documentation

TO ORDER: refer to page 99

IN VITRO MONOCLONAL ANTIBODY PRODUCTION

Inotiv Bioproducts has the expertise to produce your monoclonal or secreted protein in vitro. We have the capacity to produce 10mg-300g of research or cGMP antibody, or other secreted proteins, in our innovative tissue culture bag and hollow fiber production units. We offer a variety of media options such as RPMI, DMEM, IMDM, serum free, protein free, or other custom media formulations.

SERVICE	DESCRIPTION	CELL LINE	PRODUCTION TYPE	CAPACITY	ADVANTAGES
Small Scale Production	• Cost effective for smaller research runs • Good for early feasibility, clonal selection, and media optimization	Hybridomas (CHO's, 293's,PerC.6 and secreted proteins)	Tissue, Culture Bag Hollow Fiber Bioreactor Spinner Flasks	Up to 1 gram per project	• Reduced cost • Yield ~20-150mg per 1 L bag • Quick turn-around • Excellent oxygen transport
Large Scale Production	• Flexible and easy scale up • Larger scale research • and cGMP runs	Hybridomas (CHO's, 293's, PerC.6 and secreted proteins)	Hollow Fiber Bioreactor Wave Bag Rocker	10mg-300g per project	• Max environmental control • Reproducible manufacturing process • Reduces extraneous proteins • Highly concentrated product

HYBRIDOMA DEVELOPMENT

Our hybridoma development program is a flexible, interactive, and cost-effective multi-phased service. We will work closely with you to design a program that will meet your requirements. Our custom development options include providing up to three, five, or 10 clones, or as many as you require. As our customer, you retain all rights to any clones that are produced. Once the clones are developed, we can scale them up via in vivo or tissue culture supernatant.

SERVICE	REQUIREMENTS	PROJECT OUTCOMES
Stage I: Immunization	• Immunize mice with antigen • Boost/Test by ELISA or alternate method • Additional boost(s) if needed • Pre-fusion boost	• Move mice with best titers as fusion candidates • Immunizing multiple mice increases success
Stage II: Fusion/Screen and Select	• Fusion with myeloma cell line • Grow cells in HAT medium • Initial screen/selection	• Screen all initial plates • Expand positive wells and test by ELISA • Set up to 30 positives for cloning • Keep frozen back-up for future testing
Stage III: Cloning/Frozen Stock	• First cloning • Final cloning • Selection for non-HT requirement • Frozen stock and small antibody scale-up	• Clone by limiting dilution method • Test clones by ELISA • Several cloning cycles • Final clones expanded and small amount of antibody produced

POLYCLONAL ANTIBODY PRODUCTION

Our comprehensive polyclonal antibody production service is offered in a variety of species. These include rabbits, goats, chickens, guinea pigs, rats, and mice. We can make your polyclonal using a wide range of antigens, bacteria, viruses, fungi, fusion proteins, synthetic peptides, plasmids, DNA, and other proteins. Peptide synthesis, carrier and labeling conjugations, and purification can easily be added to your productions. Standard protocols are available for each species, or we can follow your specific protocol. All our procedures are fully documented, allowing complete traceability.

SERVICE	ANTIGEN	PRODUCTION TYPE	PRODUCTION CAPACITY	AREA OF USE	ADVANTAGES
Polyclonal	Proteins, Peptides, variety of antigens	Rabbits, Goats, Chickens, Mice, Rats, Guinea Pigs, Sheep and Horses	Small to Large Scale (all size runs available)	Diagnostics, Research	Variety of Species USDA Licensed Standard/Custom Protocols

TO ORDER: refer to page 99

Custom antibody production
BIOPRODUCTS

ANTIBODY PURIFICATION

Inotiv Bioproducts can purify from mg to gram quantities of your monoclonal or polyclonal antibodies utilizing a wide array of protein purification methods, for research or cGMP diagnostic use. We can also purify any raw antibodies that have been produced in your lab or from another supplier. Our scientific staff will work with you to discuss the best options available to meet your needs. Our goal is to develop a procedure which provides the best balance between yield, purity and cost.

SERVICE	PRODUCTION TYPE	METHOD	PRODUCTION CAPACITY	AREA OF USE	ADVANTAGES
Antibody Purification **IEF, SEC, MW Testing** **Fab and F(ab')2 Fragmentation** **FITC, Biotin, Alk Phos, and HRP Conjugation**	Monoclonals Polyclonals Secreted Proteins IgM IgY	Protein A and G, Antigen affinity, Hydrophobic interaction, Size exclusion, Ammonium sulphate, Ion exchange	Small to large scale (20mg - 20g scale available)	Diagnostics, cGMP Diagnostic Research	• Variety of Methods • Low endotoxin for *in vivo* use cGMP compliant for diagnostic use • Purify customer's in-house antibody • Standard/Custom Protocols

IMMUNOGENICITY IMMUNIZATION

Inotiv Bioproducts provides a unique Immunogenicity Immunization service in a variety of species, such as rats, mice, guinea pigs, and rabbits. We provide serum samples from a wide range of antigens, bacteria, viruses, lipids, nucleic acids and other proteins. Non-immunogenic haptens require conjugation with an epitope such as a protein or polysaccharide before they can illicit an immunologic response. Standard protocols are available for each species, or we can follow your specific protocol. All our procedures and production records are fully documented, allowing complete traceability.

SERVICE	ANTIGEN	PRODUCTION TYPE	PRODUCTION CAPACITY	AREA OF USE	ADVANTAGES
Immunogenicity Immunization	Proteins, viruses, variety of antigens	Rabbits, Mice Rats, Guinea Pigs	Small to large scale (all size runs available)	Vaccine, Research Discovery	Variety of Species USDA Licensed Standard/Custom Protocols

MAP/RAP/HAP TESTING

- If your production must be free of *Mycoplasma* or adventitious viral contamination, we recommend our MAP, RAP, and HAP testing programs
- These programs can screen your cell line against the adventitious viruses associated with your cell line's origin. Testing is available by both PCR and serology

WHOLE EMBRYO CULTURE SERUM/EGF, 2.5S AND 7.0S NERVE GROWTH FACTOR

- Inotiv Bioproducts offers a custom-collected serum for use in Whole Embryo Culture (WEC) of seven- to nine-day-old rat and mouse embryos, as well as the best and most competitively priced mouse-derived NGF and EGF. Custom orders are available upon request

RODENT SERA AND TISSUES

- We have ready access to rodent tissues and sera from high-quality, genetically-defined, adventitious virus-free mice and rats
- Rabbit and nonhuman primate tissues and sera available as well
- Quotes from specific strains are available upon request

Your custom antibody production partner

Whether your needs call for *in vivo* or *in vitro* production, we can supply a reliable stream of antibody to meet your research development and production needs. Our staff can perform an evaluation/optimization run to scale up, utilizing the proper regulatory documentation. We can also purify and further process your antibody to meet your desired specifications.

Visit our website, inotivco.com/bioproducts, for our full program, or contact us at 800.972.4362 or by e-mail at Bioproducts.na@inotivco.com to place an order.

TO ORDER: refer to page 99

Ordering information

ORDERS

You can place your order by phone, e-mail or by post: make sure it includes a purchase order number and contact person.

Orders and deliveries are subject to the Inotiv T&C available here: **General Terms and Conditions of Sale (inotivco.com)**

Our customers are kindly requested to place their orders and inquiries at:

ENVIGO RMS BV
Keizersveld 43B, Venray
Postbus 553, NL-5800 AN Venray
The Netherlands

T +31.478.578.300
W inotivco.com
Registration nr: TVWA/09/11452

Sales department contact information:

COUNTRY	EMAIL	TEL
Netherlands	rms.benelux@inotivco.com	t: +31.478.578.320
Belgium / Lux	rms.benelux@inotivco.com	t: +31.478.588.995
Scandinavia	rms.nordic@inotivco.com	t: +31.478.588.995
Baltic States	rms.nordic@inotivco.com	t: +31.478.578.324
Hungary / Czech Rep.	rms.benelux@inotivco.com	t: +31.478.588.995
Rest Eastern EU	rms.nordic@inotivco.com	t: +31.478.578.322
Croatia	rms.it@inotivco.com	t: +39.0432.727.793
Slovenia	rms.it@inotivco.com	t: +39.0432.727.793

Our Sales Department can be reached by phone on Monday till Friday from 08.00 - 17.00 hours.

We request that our clients place orders with the correct delivery and invoice address. Also, the correct stock or strain, age, weight and sex of the animals must be pointed out clearly on all order forms. We give our preference to standing orders to ensure that we have the appropriate animals available. If you require information on the specific date of birth, please advice prior to shipping date since after weaning animals are maintained by either weight or age groups by week.

All orders for animals which originate from our US, UK and Israeli facilities must be placed by Wednesday noon to ensure that animals are delivered the following week. Orders from our facilities on mainland EU, must reach us no later than Thursday noon. Enquiries / Reservations given by the Customer Services Representative will only remain open for a period of 3 working days from the time of the official offer. Therefore if no instruction is received from the customer, their reservation will be released automatically.

WEIGHT SPECIFICATIONS

In the event that an order for animals includes a weight specification, Inotiv will assume that such specification pertains to the packaging weight. The client must take this into account when placing an order. It is known that animals may experience weight changes during transport. Depending on the age, sex and developmental status of the animal and duration of the transport itself, animals might lose or gain weight during transport. In almost all cases, animals will return to their weight at shipping within 24 - 48 hours after arrival. This statement has to be used as a guidance only, as the rate of weight recovery may be strain-specific and is also influenced by external factors, e.g. maintenance on arrival in a new facility, diet composition and/or position of individuals in a new animal hierachy. Contact our local office for animals required with a narrow defined weight range.

PREGNANT ANIMAL POLICY

Inotiv uses well-established techniques to successfully produce timed mated rats, mice, hamsters, guinea pigs, and rabbits. Inotiv uses an impedance meter for determining the stage of estrus in rats.* Timed mated rats and mice are determined by observation of a vaginal plug. Plug date for rodents is considered to be day zero (0) of gestation.

* For timed mated animals fulfilled from Inotiv Affiliates in Europe, in general, animals are mated overnight from 16.00 until 08.00 hours. In case of timed-mating during the day, a surcharge of 50% is added to the pregnant animal price. In case a timed-mating (or preparation) set up on a holiday and / or a Sunday, Inotiv will charge Euro 128 per order. For rabbits the fee is Euro 11,50 per rabbits with a minimum charge of Euro 134 per order.

Due to the natural variation in the length of gestation, the exact day of parturition cannot be guaranteed. In addition, Inotiv cannot guarantee the minimum number or sex of offspring per litter.

Inotiv may ship animals which are in late gestation if requested by customer**, as they may deliver their litter while in transit. Requests for credit or replacement of animals shipped in late gestation per customer request may be declined in Inotiv's sole discretion.

** For models fulfilled from Inotiv Affiliates in Europe, the last stage of gestation for mice is over 17 days and for rats is over 18 days, each at shipping. To comply with UK guidelines, Inotiv cannot ship rodents more than 17 days of pregnancy at packing when fulfilled from the UK. Pregnant animals shipped in the UK are transported in accordance with the (Animal Scientific Procedures) Act 1986 and EC 1/2005 Protection of animals during transport.

Inotiv does not guarantee that late term animals will not deliver in transit. If animals deliver while in transit, Inotiv may charge the full order price.

If problems regarding gestational age or pregnancy are encountered, customers should immediately contact Inotiv's customer service department and provide detailed information regarding the animals involved. Requests for credit and/or replacement animals may generally be declined by Inotiv, in its discretion, if appropriate documentation is not supplied to Inotiv.

TO ORDER: refer to page 99

EXPECTED PREGNANCY RATE

STOCK OR STRAIN	Timed mated <13 days gestation (at shipping)	Timed mated ≥13 days gestation and over (at shipping)	Untimed pregnant ≥13 days gestation (at shipping)
Outbred Rats/Mice	+	90%	90% ++
Inbred Rats/Mice	+	90%	90% ++

+ Plug guarantee only; no guaranteed pregnancy. Plug date = Day 0.

++ Untimed pregnant rodents will be selected from our breeding colonies on the basis of palpation or visual confirmation. A variation of three to four days gestation can be expected. Inotiv is not responsible for actual gestation and/or exact day of littering for untimed pregnant rodents.

To avoid charges, cancellations for timed mated rats, mice, guinea pigs, and hamsters must be received one week prior to mating date, however, cancelled orders for timed mated rabbits will be charged at full price regardless of the amount of notice supplied.

For orders from Inotiv's Affiliates in Europe, when ordering females with litter, customer should take into account that Inotiv can't ship litters which are less than 3 days of age at packing. When animals are sourced from the UK, the minimum age of the litter must be at least 7 days at packing. If customer's research project requires such litters, Inotiv recommends ordering timed mated pregnant rats and mice which can litter at customer's facility.

SHIPPING MALE MICE

One of the problems often encountered with group-housed male mice is excessive aggression which can lead to negative affects both on the well-being of the animals and on the validity of experimental results. In order to minimize the risk of male aggressiveness, Inotiv is housing male mice as cage mates from weaning onwards and will not mix these with unfamiliar mice upon shipping. Nevertheless mice can show aggressive behavior upon arrival and housing at the customers facility due to differences in husbandry and hierarchy. It is therefore advisable to not mix male mice from different delivery boxes and to house them in small groups (three to five animals per cage) as this will reduce the incidents of stressful situations.

PACKAGING

The packaging is not included in the animal price. Box sizes do include the lid. Our prices for the most used export boxes are:

Filterbox large - mice, rats: 63 * 45 * 18 cm	€ 26,15
Filterbox small - mice, rats: 43 * 30 * 18 cm	€ 20,60
Filterbox guinea pigs : 56 * 36 * 23 cm	€ 25,30
Filterbox rabbits: 61 * 36 * 26 cm	€ 25,30
Filterbox mutant (double insulated) - mice, rats: 56 * 36 * 23 cm	€ 40,95
Filterbox US - rodents : 63 * 43 * 20 cm	€ 49,35

Animals are supplied in filtered boxes which include gel and/or diet. This ensures that healthy animals are delivered to your facility.

EXTRA CHARGES

For some special demands based on the order specifications at packing, the following additional surcharges may apply:

Weight range 3 gr. (only for mice)	add 10%
Weight range 5 gr. (only for rats)	add 15%
Weight range 10 gr. (only for rats)	add 10%
Weight range 25 gr. (only for guinea pigs)	add 10%
Weight range 250 gr. (only for rabbits)	add 10%
Age range 3 days (only for mice and rats)	add 10%
Guaranteed (non) littermates (inventoried rodents only)	add 10%
Extra specifications for time mated rodents	add 50%
Single gender litters with mother	add 25%
Animal identification	add € 9,00

DELIVERY COST

Per region fixed delivery costs are calculated. If you want information on these calculated transport costs, please contact us. If animals are shipped directly by air, freight charges will be pre-paid by Inotiv and charged on your invoice. For a dedicated delivery a separate delivery cost will be calculated.

CANCELLATIONS

For ethical as well as economic reasons, Inotiv reserves the right to charge for late cancellations or changes to confirmed order and/or delivery arrangements. We will apply the following charges (animal value only) which are based on the age of the animals (rodents and guinea pigs) at time of cancellation.

Cancellation up to 14 days or more before the scheduled delivery:	80%
Cancellation less than 14 days before the scheduled delivery:	100%

Inotiv can accept cancellations for standard inventoried mice and rats under the following conditions:

- Inbred when ≤ 8 weeks of age
- Outbred, hybrid and mutant when ≤ 6 weeks of age

In case of rabbit cancellations, a 100% cancellation charge will apply to confirmed orders for rabbits which are cancelled less than 10 weeks prior to the planned delivery date. If a confirmed order for rabbits over 18 weeks of age is cancelled at anytime then an automatic 100% cancellation charge will apply to the order. In both cases the cancellation fee (animal value only) will be based on the age of the animals at time of cancellation.

NON-CUSTOM DIET & BEDDING.

Non-Custom Diet & Bedding orders may only be cancelled, without charge to customer, if customer's notice of cancellation is received by Inotiv prior to Inotiv's preparation of the non-custom diet & bedding for shipment. Customer may be charged 100% of the order price if a cancellation request is received thereafter.

WARRANTY

Growth chart data provided in this Product Guide should be used as a guideline only. Data can be subject to differences in environmental circumstances, such as housing conditions, type of diet, etc.

TO ORDER: refer to page 99

PRICES AND TERMS

All prices are ex-works and are valid till December 31st, 2024. Prices are quoted in Euro and are subject to change without notice. Terms are net 30 days. Unless otherwise requested, shipping charges will be prepaid and added to your invoice.

Any questions/concerns with information contained in the invoice must be communicated to Inotiv Customer Service within fifteen (15) calendar days of the above invoice date. After fifteen (15) days, all charges are deemed final and if re-invoicing is required, the original invoice date remains in effect for application of terms. In case re-invoicing is requested by the customer due to reasons out of our control, Inotiv reserves the right to add an administrative fee of €75,00 to the new invoice.

Furthermore surcharges may apply to special invoicing requests and extra documentation (such as e.g. weight lists etc.)

CONDITIONS

Because of the nature of our products, returns cannot be accepted. Inotiv will, at its election, replace or refund the purchase price of animals which do not conform to the customer's written specificities. In the event of a complaint of any kind, customers must provide the purchase order number and invoice number. Inotiv must be notified of any shortages within seven days (7) of receipt of the order.

LICENCES

The customer shall be responsible for obtaining all necessary licenses and approvals for use or import of any item purchased from Inotiv and for all necessary exchange control consents required in order to pay for goods.

TO ORDER: refer to page 99

Inotiv
Who we are

Inotiv provides the broadest range of research models and related services to the pharmaceutical and biotechnology industries, government, academia, and other life science organizations.

Our business is founded on a dedication to exceptional client service and the experience and expertise of 2,200 people. With locations worldwide, we are committed to helping clients realize the full potential of their research and products to bring life-changing therapies to people around the world.

IN PARTNERSHIP WITH OUR CLIENTS

Our clients conduct research and develop products that have the potential to improve lives. But achieving this potential is becoming increasingly difficult. We believe that for our clients to achieve their goals, they need to trust and be absolutely confident in the company they choose to help them with their research, products and services. You can be confident that at Inotiv we are dedicated to understanding your challenges, appreciating your perspectives and helping you achieve your goals.

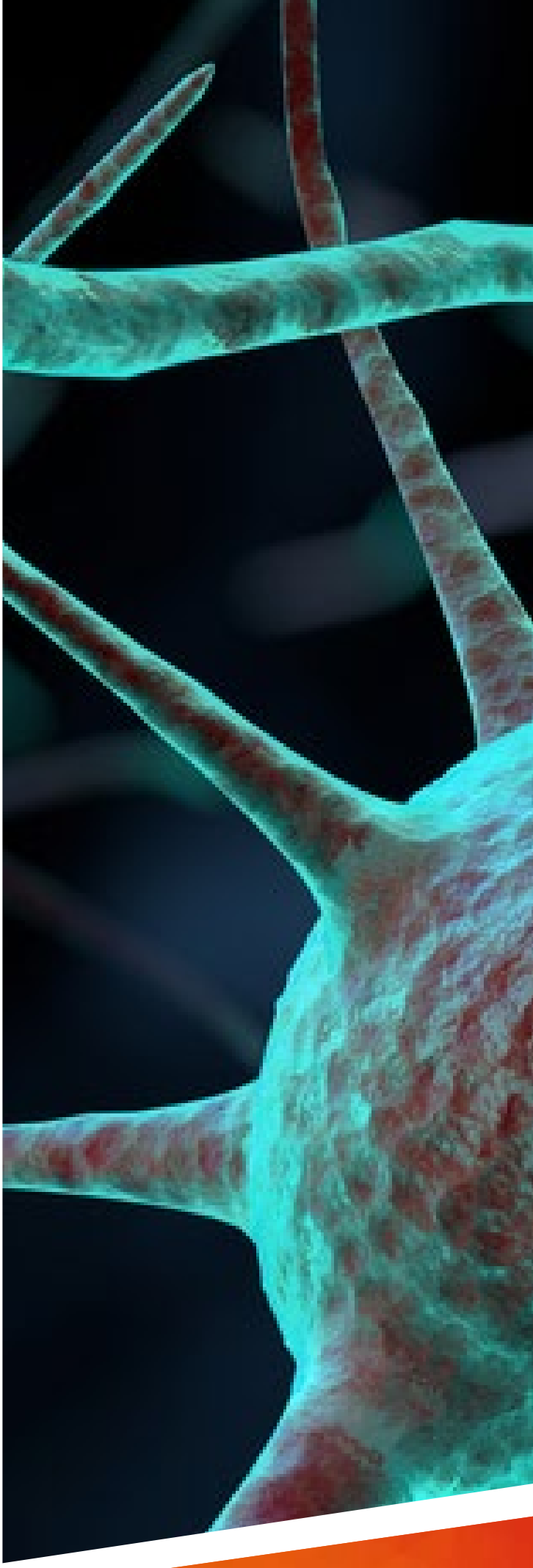
EXCELLENT CLIENT EXPERIENCES

We are proud of our client-centric culture which makes us responsive to every client, no matter their size, as we continually optimize their product delivery and research programs to help ensure consistently clear results.

FOSTERING AND DEVELOPING SCIENTIFIC EXCELLENCE

Our ability to combine scientific excellence with empathetic working relationships is what differentiates us. We seek to understand our clients' goals and challenges, appreciate our clients' perspectives, and work together for a better future.

Beyond our responsibility to clients, at Inotiv we are responsible to people, animals and the communities in which we live. We are dedicated to assuring people that the products they use have been tested properly for safety and efficacy. We are committed to the highest levels of animal welfare. And, we provide services that help develop new products to improve health as well as protect food supplies and the environment. At Inotiv, we exist to help our clients secure the potential of their research and products that enhance and enrich life.



Read more at **inotivco.com**

TO ORDER: refer to page 99

inotiv

analyze. answer. advance.

Visit us at inotivco.com