harlan®
Helping you
do research better

BALB/c

Bagg's Albino

Origin

Albino stock acquired by H. Bagg in 1913 and therefore called "Bagg albino" or BALB. In 1923, inbred by MacDowell, Cold Spring Harbor, NY, USA. In 1932, at F26 to Snell, who added the 'c' for albino.

BALB/cAnNHsd
Derived from a breeding nucleus obtained from the National Institutes of Health, Bethesda.

BALB/cByJHan®Hsd
In 1947, at F41 to The Jackson Laboratory, Bar Harbor. In 1961, to Dr. DW Baily (By) at National Institutes of Health, Bethesda. In 1974, at F136 to the Jackson Laboratory. To Central Institute for Laboratory Animal Breeding, Hannover, Germany. In 1994, to Harlan UK through acquisition. Cryopreserved in 2005.

BALB/cOlaHsd
Obtained by Laboratory Animals Centre, Carshalton from the Jackson Laboratory, Bar Harbor in 1955. To Clinical Research Centre, Harrow and then to OLAC (now Harlan Laboratories) in 1976.

BALB/cJRccHsd
From Jackson Laboratory, Bar Harbor, Maine. In 1974 to RCC Ltd. (formerly Ibm and BRL) in Füllinsdorf, Switzerland. To Harlan Laboratories through acquisition in 2004.

Research Applications

Immunology, plasmacytomas, monoclonal antibodies, behaviour, aggression, low mammary tumour incidence, corpus callosum, hippocampus, parasitology.

Characteristics

The BALB/c is used as a general-purpose strain in many disciplines. Well known for the production of plasmacytomas on injection with mineral oil. These tumours form the basis of the production of monoclonal antibodies.

Anatomy
Large brain weight (Storer, 1967; Roderick et al, 1973; Wahlsten *et al*, 1975). Large brain to body weight ratio. Large spinal cord (Roderick *et al*, 1973). Large relative kidney weight (Schlager, 1968). Large forebrain and hippocampus volume (Wimer *et al*, 1969). Large number of A10 dopaminergic neurons in midbrain region (Bernardini *et al*, 1991). Corpus callosum absent in 39% of animals (Wahlsten, 1974). This is associated with slow growth of the medial septum subadjacent to the cavum septi. (Wahlsten and Bulman-Fleming, 1994). Absence of corpus callosum related to retarded formation of the hippocampal commissure in this strain and in 129/J mice (Livy and Wahlsten, 1997). Low bone density of femur (Beamer et al, 1996). Anatomy of Ammon's horn (hippocampus and dentate gyrus) different from that of seven other strains (Barber et al, 1974). High erythrocyte count, high haematocrit, high haemoglobin (Russell *et al*, 1951). Large spleen at all ages (Albert et al, 1966). Accessory spleens in about 21% of animals, and number of nipples commonly exceeds five pairs (Hummel *et al*, 1966). Occasional (less than 2%) cases of visceral inversion (Hummel and Chapman, 1959). Small pituitary (Sinha *et al*, 1975). Large proportion of sperm-head abnormalities (44%) (Styrna *et al*, 1991). Low level of spontaneous sister chromatid exchange (Nishi *et al*, 1993). Provides a sensitive and reproducible model of focal and global brain ischemia (Barone *et al*, 1993). Important blood volume: 10,35 ml/100 g (Vacha, 1975).

Behaviour
High intra-strain aggression, low open-field activity, high tail rattling but low social grooming during aggressive encounters (Southwick and Clark, 1966). Low open-field activity (Thompson, 1953). High spontaneous locomotor activity (Nikulina *et al*, 1991). Long time of immobility in a forced swimming test (Nikulina *et al*, 1991). Short latency to cross barrier in maze, high urination and defecation in test apparatus (McClearn *et al*, 1970). Low wheel activity (Messeri *et al*. 1972). Low avoidance conditionability (Royce, 1972) and low shock avoidance learning in males (Royce *et al*, 1971). Poor shock avoidance learning (Wahlsten, 1973). Low alcohol preference ratio (McClearn, 1965; Rodgers, 1966). High social dominance of males in competition for females (DeFries and McClearn, 1970). High balsa-wood gnawing activity (Fawdington and Festing, 1980). Exhibit hypersecretion of corticosterone and marked brain catecholamine alterations and disruption of Morris water maze performance following stressors such as foot-shock. However, performance deficits were prevented by cross fostering to C57BL/6 foster mothers (Zaharia *et al*, 1996).

Drugs
Susceptible to skin ulceration by 7,12-dimethylbenz(a)anthracene (DMBA) (Thomas *et al*, 1973). Sensitive to the development of uterine tumours following treatment with DMBA at 4-weeks of age (Tsubura *et al*, 1993). Sensitive to the induction of skin tumours by methylnitrosourea in methanol (Lijinsky *et al*, 1991). Susceptible to tumour induction by 3-methylcholanthrene (Whitmire *et al*, 1971). High incidence of lung tumours after administration of methylcholanthrene by gavage (Akamatsu and Barton, 1974). Susceptible to induction of leukaemia but resistant to induction of liver tumours by neonatally administered DMBA (Flaks,

1968). High incidence of interstitial tumours of testis induced by stilboestrol, high incidence of haemangioendotheliomas, particularly in interscapular fat pad and lung in mice treated with O-aminoazotoluene (Heston, 1963). Injection of mineral oil i.p. induces a high incidence of transplantable plasmacytomas (myelomas). Bence Jones proteins include kappa and lamda light chains and the two-chain IgA protein. 60% of tumours are of the IgA type (Potter, 1972). Susceptibility appears to be mediated by two genes on chromosome 4 (Potter *et al*, 1994). Susceptible to daunomycin-induced nephrosis (Kimura *et al*, 1993). Sensitive to X-irradiation (Roderick, 1963; Storer, 1966). Low LD_{50} to X-irradiation (Yuhas and Storer, 1969). Nicotine increases shock avoidance learning (Bovet *et al*, 1966). Sensitive to insulin (Brown, 1965). Poor ovulatory response to PMS at both 3 IU and 7 IU, but response increased by exposure to males (Zarrow et al, 1971). Low locomotor excitation after treatment with D-amphetamine (Babbini *et al*, 1974). Resistant to hyperbaric oxygen (Hill *et al*, 1968). Insensitive (eosinophil response) to cortisone acetate (Wragg and Speirs, 1952). Low sensitivity to induction of malformed ribs and vertebrae by hypoxia on ninth day of gestation (Dagg, 1966). Sensitive to chloroform toxicity (Christensen *et al*, 1963).
Resistant to toxic effects of isoniazid (Taylor, 1976b). Resistant to neurotoxic effects of monocrotophos (Rao *et al*, 1991). High transient increase in renal lipid peroxidation following treatment with nickel (Misra *et al*, 1991). Resistant to biliary tract injury following oral dosing with 500 micrograms of the fungal toxin sporidesmin, but the injury is much more persistent than in SJL and was accompanied by periductal fibrosis and occasionally by obliteration of ducts typical of sclerosing cholangitis (Bhathal *et al*, 1990). High LD50 following injection of butylated hydroxytoluene (BHT) (Kehrer and DiGiovanni 1990). High histamine release from peritoneal mast cells induced by compound 48/80, a calcium dependent histamine releaser (Toda *et al*, 1989). High histamine release from peritoneal mast cells induced by Ca2+ ionophore A23187 (contrast C57BL/6) (Toda *et al*, 1989). Cultured mast cells grow more slowly and release less histamine and TNF-alpha following anti-DBN IgE antibody treatment than those of strain SJL (Bebo *et al*, 1996). Highly sensitive to the induction of catalepsy by haloperidol associated with midbrain dopamine D2 receptor density levels (Kanes *et al*, 1993).

Resistant to both acute and chronic cadmium toxicity (contrast NFS) (Abshire and Waalkes, 1994). However, cadmium can induce haematopoietic and suppress pulmonary tumours in these mice (Waalkes and Rehm, 1994). Resistant to weight loss induced by cocaine (Shimosato et al, 1994). Clonidene induces a strong aggressive behavioural response (Nikulina and Klimek, 1993). More resistant to acute toxic effects of aflatoxin B-1 than C57BL/6 (Almeida *et al*, 1996). The IgE response following topical application has been used to predict which chemicals may have the potential to cause sensitisation of the respiratory tract (Hilton *et al*, 1996). More susceptible to the development of micronuclei than C57BL/6 or DBA/2 following treatment with clastogenic base analogues and nucleosides (Sato *et al*, 1993). Oestrogen does not induce an increase in VLDL and LDL-cholesterol (like C3H contrast C57BL/6 and C57L) (Srivastava, 1995).

Genetics

Coat colour genes - *A, b, c, D* : albino.
Histocompatibility - *H-2^{d}, Thy-1^{b}*
Biochemical markers - *Apoa-1^{b}, Car-2^{b}, Es-1^{b}, Es-2^{b}, Es-3^{a}, Gpd-1^{b}, Gpi-1^{a}, Hba^{b}, Hbb^{d}, Idh-1^{a}, Ldr-1^{a}, Mod-1^{a}, Mup-1^{a}, Pep-3^{a}, Pgm-1^{a}, Pgm-2^{a}, Trf^{b}.*

The BALB/cJ and BALB/cByJ were separated in 1935 at F38. There are very few genetic differences between these two substrains. The *Qa-2* gene is one gene that does differ between those substrains and involves a deletion in the BALB/cBy genome.
Three major substrains trace back to before 1940. Data on genetic markers suggest that these substrains have diverged largely through mutation or residual heterozygosity rather than genetic contamination. (Hilgers *et al*, 1985) have shown that the substrains differ as a result of mutations at the *Raf1* locus (controlling the expression of alpha-fetoprotein), the *Qa2* locus (governing cell surface antigens), the *Gdc1* locus (governing L-glycerol 3-phosphate dehydrogenase activity in the liver) and the PR1 repetitive sequence. There is no evidence for genetic contamination during the early history of the strain.
This strain carries the *Mus musculus musculus* Y-chromosome, while others have the *M. m. domesticus* type (Nishioka, 1987).

Immunology

Resistant to experimental allergic encephalomyelitis (EAE) (Levine and Sowinski, 1973). Resistant to EAE with short duration but moderate mortality (Lindsey, 1996). Description of an allergic model in BALB/c mice (Hessel *et al*, 1995a; Hessel *et al*, 1995b) where IL-I6 is involved (Hessel *et al*, 1998). High lymphocyte phytohaemagglutinin response (Heiniger *et al*, 1975). Good immune response to type III pneumococcal polysaccharide (Braley and Freeman, 1971). Good splenic PFC immune response to pneumococcal polysaccharide (Amsbaugh *et al*, 1972). Immune response of SJL mice to type-III pneumococcal polysaccharide declines by 42 weeks, in contrast to BALB/c and C3H (Smith, 1976). Poor primary immune response to bacteriophage fd (Kölsch *et al*, 1971). Poor immune response to synthetic double-stranded RNA (Steinberg *et al*, 1971). Responder to synthetic polypeptide (Pinchuck and Maurer, 1965) and Glu^{60}, Ala^{30}, Tyr^{10} (Dorf *et al*, 1974). Very good immune response to cholera A and B antigens (Cerny *et al*, 1971). Good immune response to dextran -1,3-glucosyl linkages (Blomberg *et al*, 1972). High responder to dextran (Blomberg *et al*, 1972). Good primary immune haemolysin and haemagglutinin response (Ghaffar and James, 1973). Poor immune response to Salmonella anatum, S. senftenberg and S. strasbourg lipopolysaccharide (Di Pauli, 1972). Good immune response to Vi antigen (Gaines *et al*, 1965). Precipitating and skin-sensitising antibodies have fast electrophoretic mobility (Fahey, 1965). Non-discriminator between `H' and `L' sheep RBC (McCarthy and Dutton, 1975). Low anti-DNP antibody concentration (Paul et al, 1970). High PHA-stimulated lymphocyte blastogenic response (Hellman and Fowler, 1972). Erythrocytes have a low agglutinability (Rubinstein *et al*, 1974). Resistant to induction of experimental autoimmune thyroiditis (Vladutiu and Rose, 1971). Resistant to induction of autoimmune prostatitis (contrast C57BL/6) (Keetch *et al*, 1994). Immunization by intraperitoneal injection of foetal human (but not calf) proteoglycan depleted of chondroitin sulphate together with complete or incomplete Freund's adjuvant produces progressive polyarthritis and ankylosing spondylitis.
Clinical assessment suggests that affected mice have many similarities to human rheumatoid arthritis and ankylosing spondylitis. Eventually,

the joints become stiff and deformed. Antibodies against collagen type II were detected in approximately 25% of arthritic mice, but only following cartilage degradation. Sublines differed in their response, but 9 other mouse strains and 5 F1 hybrids were resistant. See Glant *et al*, (1993) for a review. Resistant to induction of anaphylactic shock by ovalbumin (Tanioka and Esaki, 1971). Anti-BPO IgE monoclonal antibody failed to produce potent systemic sensitisation sufficient for provocation of lethal shock in most aged (6 to 10 months) mice (Harada *et al*, 1991). Low immunological response to *Salmonella typhi* porins (Gonzales et al, 1995). Resistant to immunosuppression of contact hypersensitivity by ultraviolet B light (Noonan and Hoffman, 1994). Low neutrophil response to thioglycolate broth and killed bacteria (contrast C57BL/10) (Marley *et al*, 1994). Pristane induces immune complex glomerulonephritis in association with autoantibodies typical of lupus erythematosus, though the strain is not normally considered to be susceptible to the disease (Satoh *et al*, 1995). The IgE response following topical application has been used to predict which chemicals may have the potential to cause sensitisation of the respiratory tract (Hilton *et al*, 1996). Diminished expression of neutral glycosphingolipid GgOse(4)Cer in concanavalin A stimulated T lymphoblasts (Muthing, 1997). The potential influence of circadian changes and laboratory routine on some immune parameters has been described by Kolaczkowska *et al* (2000).

Infection

Highly susceptible to infection by *Salmonella typhimurium* strain C5 (Plant and Glynn, 1974; Robson and Vas, 1972). Relatively resistant to a natural intestinal helminth infection (Eaton, 1972). High susceptibility to BALB/Tennant leukaemia virus (Tennant, 1965). Transmission of murine leukaemia virus (Scripps) through three successive generations 100% (Jenson *et al*, 1976). Highly susceptible to development of leukaemia on infection with Friend virus (Dietz and Rick, 1972). Susceptible to *Mycobacterium marinum* and good plateau harvest of M. leprae 8 months after infection (Shepard and Habas, 1967). Susceptible to infection with *Mycobacterium paratuberculosis*, and develops a chronic infection (Chiodini and Buergelt, 1993). Susceptible to infection with *Mycobacterium avium*, but resistance is enhanced by Freund's incomplete adjuvant (Castro *et al*, 1993). Susceptible to infection with *Yersinia enterocolitica* associate with a poor interferon gamma response (contrast C57BL/6) (Autenrieth *et al*, 1994). Susceptible to the induction of chronic pyelonephritis with *Escherichia coli* after introduction of the bacteria by the ascending route (Gupta *et al*, 1995).

Relatively resistant to infection with *Helicobacter felis* (contrast C57BL/6) (Mohammadi *et al*, 1996). Resistant to infection by *Helicobacter felis* with only mild gastritis in the antrum and no atrophy seen over time (cf CBA, contrast 4 other strains) (Sakagami *et al*, 1996). Susceptible to mouse hepatitis virus type 3 (Le Prevost *et al*, 1975). Resistant to mouse adenovirus type 1 (contrast C57BL/6) (Guida *et al*, 1995).
Resistant to induction of diabetes mellitus by encephalomyocarditis virus (Boucher *et al*, 1975; Hirasawa *et al*, 1995). Resistant to measles virus induced encephalitis, which correlates with a low cytotoxic T-lymphocyte response (contrast C3H, C57BL/6) (Niewiesk *et al*, 1993). Highly susceptible to the *Leishmania tropica parasite*, with the local disease being uncontrolled and with the development of metastases and fatal visceralization (Howard *et al*, 1980). Supported sustained growth of six strains of *Leishmania mexicana mexicana* (contrast C57BL/6) (Monroy-Ostria *et al*, 1994). Highly susceptible to *Leishmania major*, with the parasites disseminated within 10-24 hrs. from the site of subcutaneous footpad injection into the popliteal lymph node, spleen, lung, liver and bone marrow in contrast to resistant C57BL/6, CBA/J and C3H/HeJ (Laskay *et al*, 1995; Scott *et al*, 1996). Susceptible to infection with the helminth worm *Angiostrongylus costaricennsis* (Ishii and Sano, 1989). Susceptible to the induction of dental caries due to infection with *Streptococcus mutans* (Kurihara *et al*, 1991). Resistant to infection with *Pseudomonas aeruginosa* in contrast with susceptible DBA/2 mice (Morissette *et al*, 1995). Resistance is associated with a quicker inflammatory response and earlier initiation of bacterial clearance (Morisette *et al*, 1996). Develop mycotic mastitis following inoculation of the mammary gland with *Candida krusei* isolated from bovine mastitis (Guhad *et al*, 1995). Susceptible to the development of chronic Chagas' cardiomyopathy in postacute *Trypanosoma cruzi* infection (Rowland *et al*, 1992). Susceptible to infection with *Trypanosoma congolense* with unrestrained parasite growth to the time of death about 12 days later (contrast C57BL/6) (Ogunremi and Tabel, 1995). Resistant to lethal and body weight effects of *Toxacaria canis*, but high larval brain levels (Epe *et al*, 1994). Infection with larval *Echinococcus multilocularis* by transportal injection of hyatid homogenate results in a multivesiculation form of hyatid development (Nakaya *et al*, 1997). Susceptible to *Streptococcus suis* type 2 including the type strain, two isolates from meningitis in pigs and two isolates from tonsils of clinically healthy pigs (Kataoka *et al*, 1991). Resistant to street rabies virus (SRV) injected via the intraperitoneal route (Perry and Lodmell, 1991). Following administration of murine cytomegalovirus, BALB/c, BALB.B, and BALB.K mice develop persistent myocarditis regardless of age at infection, and age-related cardiopathy is frequent and severe in infected and uninfected mice (contrast C57BL/10 and C3H) (Price *et al*, 1991). Susceptible to the lethal effects of murine hepatitis virus strain 3 (contrast A/J) (Fingerote *et al*, 1995). The mouse hepatitis virus JHM strain induces a biphasic retinal disease (Wang *et al*, 1996). Susceptible to infection with the tick-born Thogoto virus, with severe symptoms and death after a few days. The congenic strain carrying the Mx1 gene from strain A2G is resistant (Haller *et al*, 1995). Susceptible to herpes simplex virus-1 (contrast C67BL/6) (Brenner *et al*, 1994). Develop carditis on infection with Lyme borreliosis (Borrelia burgdorferi) (Barthold *et al*, 1990), but develop only mild arthritis (contrast C3H/HeJ) (Matyniak and Reiner, 1995). Hepatic amoebiasis can be induced by introducing *Entamoeba histolytica*-infected hamster liver tissue in between the adjacent liver lobes of these mice. (Bhol *et al*, 1990). Resistant to intra-vaginally innoculated *Neisseria gonorrhoeae* (Johnson *et al*, 1989). Susceptible to infection with *Ehrlichia risticii* (Williams and Timoney, 1994) Widely used in study of *Plasmodium berghei* infections, though much less sensitive than C57BL/6 (Scheller et al, 1994). Infection with *P. berghei* results in high peripheral blood parasitaemia and death within 22-24 days, but without neurological complication, in contrast with the more susceptible C57BL/6 (Moumaris *et al*, 1995). Susceptible to disseminated *Cryptococcus neoformans* (Irokanulo and Akueshi, 1995). *Nippostrongylus brasiliensis* normally rejected by 14 days postinfection.
However, this pattern of self-cure was not observed in a "putative" BALB/c substrain from the University of Texas (Mayberry *et al*, 1993).

Susceptible, with high amylase response to the fungus *Paracoccidioides brasiliensis* (Xidieh *et al*, 1994). Susceptible to the protozoan parasite *Neospora canium* following subcutaneous inoculation with tachyzoites of the NC-1 strain (Lindsay et al, 1995). May develop mite-associated ulcerative dermatitis with an allergic reaction to parasite-derived substances following infection with *Mycoptes musculinus* (Jungmann *et al*, 1996). The composition of the oral bacterial population is influenced by the origin (supplier) of the animals (Rodrigue and Lavoie, 1995).

Life-span and Spontaneous Disease

The BALB/c mouse has a low mammary tumour incidence. Primary lung tumours in 2.5% of the animals. Transplantable medullary thyroid carcinoma (Van Zwieten *et al*, 1983). No correlation between the frequencies of benign monoclonal gammopathy and H-2 haplotype was found (Van den Akker *et al*, 1987).
Median life-span 18.0 months in BALB/cJ males and 19.7 months in BALB/cJ females (Storer, 1966). Median life-span 21.4 months in BALB/cJ males and 23.9 months in BALB/cJ females (Les, 1969). Median life-span 9.9 months in BALB/cJ males and 14.9 months in BALB/cJ females (Les, 1966). Median life-span 13.2 months in BALB/cJ males and 20.2 months in BALB/cJ females (Ebbesen, 1971). Median life-span 13.2 months in BALB/c males and 20.2 months in BALB/c females (Ebbesen, 1971). Median life-span 17.0 months in BALB/cJ males and 18.7 months in BALB/cJ females (Festing and Blackmore, 1971). Median life-span 15.6 months in BALB/cJ males and 20.3 months in BALB/cJ females (Grahn, 1972). Median life-span 21.6 months in BALB/cJ males and 27.2 months in BALB/cJ females (Goodrick, 1975).
Amyloidosis 40% in males. Reticular neoplasms 23% females and 3% males (Ebbesen, 1971). Primary lung tumours 32% in males, 30% in breeding females and 14% in virgin females in Scott substrain. Leukaemia 5% (Myers *et al*, 1970). Zero incidence of lymphatic leukaemia. Mammary adenocarcinomas zero in males, 5% in breeding females and 1% in virgin females (Hoag, 1963). Mammary tumours 30% at 2 years (Bentvelzen *et al*, 1970). Mammary tumours 20% in females at 16.7 months, but 100% at 7.1 months in BALB/cfC3H (Heston and Vlahakis, 1971). Mammary tumours 10% at 14 months (Schlom et al, 1973). Low gross tumour incidence in males (Storer, 1966). Renal tumours 25-48%, mammary tumours 3-13%, reticuloendothelial tumours 11-20%, lung tumours 10-16%, synoviomas 2-8%, depending on substrain (Sass *et al*, 1976). Low incidence of virus-like particles in chemically induced sarcomas (Liebelt *et al*, 1970). Frequency of rhabdomyosarcomas was calculated to be 2.4/100,000 mice retained as breeders, and 10/14 mice found with these tumours were of the BALB/cJ substrain (Sundberg *et al*, 1991a). No brain tumours in contrast with C3H (Morgan *et al*, 1984). Rare spontaneous myoepitheliomas arising from myoepithelial cells of various exocrine glands have been observed in the J and ByJ substrains (Sundberg *et al*, 1991b). Gross tumour incidence in germ-free mice 43%, with lung tumours 21%, angiomas 6%, lymphosarcomas 5% and other tumour types less than 3% each (Smith and Pilgrim, 1971). Pulmonary tumours 26-29% (Heston, 1968).
Left auricular thrombosis occurs in 66% of older breeding females. This is associated with reduced levels of the prothrombin complex factors such as factor IX (40% of normal), factor XIII (60% of normal), factor X (50% of normal) and prothrombin (about 33% of normal). These deficiencies occur slightly before parturition (Meier and Hoag, 1966). High incidence of epicardial mineralisation (11% in males, 4% in females), which increases slightly with age (Frith et al, 1975). Heart defects, including cardiac calcinosis 17-62% (Festing and Blackmore, 1971). Spontaneous myocardial lesions of right ventricle found in 60% of females and 30% of males. These macroscopically visible degenerative fibrosclerotic lesions may represent a last phase of myocarditis of the inflammatory type found in apparently normal mice (Bellini *et al*, 1976). BALB/c mice carry a single recessive gene different from that found in C57BL/6J and WB/ReJ, causing age-related hearing loss (Willott *et al*, 1995). The tumour incidence has been described by Dragani (1979). Uterine lesions have been described by Malinin and Malinin (1972). The relationship of genotype, sex, body weight, and growth parameters to lifespan in inbred and hybrid mice has been described by Ingram *et al* (1982). A review of the life span of aging mice has been described by Myers, (1978).

Miscellaneous

Recommended host for transplantable tumours: melanoma HP and pleomorphic sarcoma 5180, although the latter is not host-specific (Kaliss, 1972). Low mortality after neonatal thymectomy (Law, 1966). Embryonic stem cell lines have been established (Kawase *et al*, 1994). Characteristics of the BALB/c strain have been described by Festing (1997) and Lyon et al, (1996). The history and characteristics have been reviewed by Potter (1985).

Physiology and Biochemistry

High Na/K ratio in erythrocytes (Waymouth, 1973). Low plasma cholinesterase activity in females (Angel *et al*, 1967). Low levels of serum ceruloplasmin in males (Meier and Macpike, 1968). Low serum haptoglobin level (Peacock *et al*, 1967). High plasma cholesterol levels (Jiao *et al*, 1990). High systolic blood pressure (Schlager and Weibust, 1967). Low mean heart rate but high heart rate adaptation (Blizard and Welty, 1971). High erythrocyte catalase level (Hoffman and Rechcigl, 1971). Low intra-ocular pressure (John, *et al*, 1997). High peripheral nerve conduction velocity (Hegmann, 1972).

High brain L-glutamic acid decarboxylase (GAD) and choline acetyltransferase and catechol-O-methyltransferase; low brain acetylcholinesterase and monoamine oxidase activity (Tunnicliff *et al*, 1973). High brain tyrosine hydroxylase activity (Ciranello *et al*, 1972). High brain plasmalogen (Sampugna *et al*, 1975).
High proportion of time spent sleeping with a high percentage of slow-wave sleep and low proportion of paradoxical sleep (Valatx and Bugat, 1974). Short tau DD, the endogenous (free-running) period of the circadian pacemaker measured in constant environmental darkness (Schwartz and Zimmerman 1990). High hypoxanthene-guanine phosphoribosyl transferase in the thalamus (Suran 1973). Low N-methylnicotinamide oxidase activity (Huff and Chaykin, 1967). Low rectal and tail temperature (Shepard and Habas, 1967). High kidney arylsulphatase activity (Daniel, 1976). Low basal level of serum prolactin (Sinha *et al*, 1975). Low spermatazoal beta-glucuronidase activity (Erickson, 1976). Urine has high osmolarity (Silverstein, 1961). High basal levels of kidney catalase, and superoxide dismutase but low basal level of kidney glutathione peroxidase and kidney glutathione (Misra *et al*, 1991). High level of alpha-fetoprotein in amniotic fluid and neonatal plasma (Adinolfi *et al*, 1990). High levels of alpha-fetoprotein in adult mice (Olsson *et al*, 1977). Low hepatic microsomal coumarin hydroxylase activity in males (Van Iersel *et al*, 1994). Secretory group II

phospholipase A2 gene has very high expression in small intestine (contrast 129/Sv and C57BL/6) (Kennedy *et al*, 1995). Stress in mice after tail bleeding has been described by Tuli et al (1995a). Stress after transportation has been described by Tuli et al (1995b). Erythrocyte oxidative stress haemolysis is influenced by the presence of the *Hbb*^{d} allele (Kruckeberg, 1991; Kruckeberg *et al*, 1987). High levels of alpha-fetoprotein in adult mice (Olsson *et al*, 1977).

Reproduction

The BALB/c has a good breeding performance and a long reproductive life-span. Colony output 1.18 young/female/wk, litter size at weaning 5.2 (Festing, 1976). Good breeding performance, mean 3.24 young/female/month (Hansen *et al*, 1973). Intermediate breeding performance, litter size 5.1, sterility 32% (Nagasawa *et al*, 1973). Low litter size (Verley *et al*, 1967). Low pre-implantation loss of embryos, but high post-implantation losses (Leonard *et al*, 1971). Embryos subject to the 2-cell block and only grow successfully in culture from the late 2-cell stage (Sekirina and Neganova, 1995).

References

Abshire MK, Waalkes MP (1994) Cadmium-induced oxidative tissue damage in mice: Role of mouse strain and tissue metallothionein levels. *Toxic Substances Journal* **13**, 141-152.

Adinolfi M, Beck SE, Seller MJ, Fedor T, McLaren A (1990) Alpha-fetoprotein levels in different strains of mice during development. *Exp. Clin. Immunogenet.* **7**, 123-128.

Akamatsu Y, Barton (1974) Neoplasms and amyloidosis in strains of mice treated with 3-methylcholanthrene. *J. Nat. Cancer Inst.* **52**, 377

Albert S, Wolf PL, Loud AV, Pryjma I, Potter R, Moore W (1966) Spleen development in mice of high and low leukemic strains. *J. Reticuloendothel. Soc. 3*, 176-201.

Almeida RMA, Correa B, Xavier JG, Mallozzi MAB, Gambale W, Paula CR (1996) Acute effect of aflatoxin B-1 on different inbred mouse strains. *Mycopathologia 133*, 23-29.

Amsbaugh DF, Hansen CT, Perscott B, Stashak PW, Barthold DR, Baker PJ (1972) Genetic control of the antibody response to type III pneumococcal polysaccharide in mice. I. Evidence that an X-linked gene plays a decisive role in determining responsiveness. *J. Exp. Med.* **136**, 931-949.

Blooddata

BALB/cOlaHsd

BARRIER 2 - NETHERLANDS - FEBR. 2009		MALE (N=10)		FEMALE (N=10)	
Parameter	**Unit**	**Mean**	**SD**	**Mean**	**SD**
Body weight (7 - 9 weeks)	g	22,99	3,87	16,08	1,37
Haematology					
Leukocytes	*10^9/l	7,80	2,97	7,81	2,26
Erythrocytes	*10^{12}/l	8,50	0,97	8,94	0,80
Hemoglobin	mmol/l	8,98	1,05	9,48	0,81
Hematocrit	l/l	0,43	0,05	0,46	0,04
Thrombocytes	*10^9/l	1.323,67	294,82	1022,10	160,51
Lymphocytes	%	62,30	16,24	74,50	9,91
Neutrophiles	%	35,40	16,14	23,90	9,10
Eosinophiles	%	0,20	0,42	0,80	1,32
Basophiles	%	0,10	0,32	0,00	0,00
Monocytes	%	2,00	1,83	0,8	1,23
Biochemistry					
AP	U/l	152,50	105,64	254,80	44,41
LDH	U/l	275,80	74,59	265,00	40,70
Urea Nitrogen	mmol/l	10,06	2,07	9,21	2,26
Creatinine	µmol/l	17 a)	7,80	n.m.[2]	n.m.[2]
Glucose	mmol/l	9,02	1,27	8,25	1,38
Bilirubin	µmol/l	10,05	2,84	13,09	3,33
Cholesterol	mmol/l	2,19	0,30	1,48	0,15
Triglycerides	mmol/l	0,94	0,92	0,43	0,11
Calcium	mmol/l	2,32	0,29	2,34	0,27
Phosphate inorg.	mmol/l	2,47	0,31	2,55	0,37
Potassium	mmol/l	6,89	0,66	7,61	0,81
ALT	U/l	36,20	6,23	52,70	18,77
AST	U/l	97,10	37,11	116,70	44,40
Sodium	mmol/l	161,75	2,22	n.m.[1]	n.m.[1]

n.m.[1] = not measurable due to dilution with 0.9 % sodium chloride

n.m.[2] = not measurable since sample was diluted due to the small total sample volume

a) = values < 27 µmol/l were set to 13.5 µmol/l for the calculation of the mean

Animals were bred and maintained at Harlan Laboratories BV on Harlan Teklad Global 2018S

Data should be used as a guideline only, since it can be subject to different parameters

Angel CR, Mahin DT, Farris RD, Woodward KT (1967) Heritability of plasma cholinesterase activity in inbred mouse strains. *Science* **156**, 529-530.

Autenrieth IB, Beer M, Bohn E, Kaufmann SHE, Heesemann J (1994) Immune responses to *Yersinia enterocolitica* in susceptible BALB/c and resistant C57BL/6 mice: An essential role for gamma interferon. *Infect. Immun.* **62**, 2590-2599.

Babbini M, Pong SF, King WT, White CL (1974) Mobility of mice after amphetamine: effects of strain aggregation and illumination. *Pharmacol. Biochem. Behav.* **2**, 803-809.

Barber RP, Vaughn JT, Wimer RE, Wimer CC (1974) Genetically associated variations in the distribution of dentate granule cell. Synapses upon the pyramidal cell dendrites in mouse hippocampus. *J. Comp. Neurol.* **156**, 417-434.

Barone FC, Knudsen DJ, Nelson AH, Feuerstein GZ, Willette RN (1993) Mouse strain differences in susceptibility to cerebral ischemia are related to cerebral vascular anatomy. *Journal of Cerebral Blood Flow and Metabolism* **13**, 683-692.

Barthold SW, Beck DS, Hansen GM, Terwilliger GA, Moody KD (1990) Lyme borreliosis in selected strains and ages of laboratory mice. *J. Infect. Dis.* **162**, 133-138.

Beamer WG, Donahue LR, Rosen CJ, Baylink DJ (1996) Genetic-variability in adult bone-density among inbred strains of mice. *Bone* **18**, 397-403.

Bebo BF, Lee CH, Orr EL, Linthicum DS (1996) Mast cell-derived histamine and tumor-necrosis-factor - differences between SJL/J and BALB/c inbred strains of mice. *Immunology and Cell Biology* **74**, 225-230.

Bellini O, Casazza AM, Di Marco A (1976) Histological and histochemical studies of myocardial lesions in BALB/cCr mice. *Lab. Animal Sci.* **26**, 329-333.

Bentvelzen P, Daams JH, Hageman P, Calafat J (1970) Genetic transmission of viruses that incite mammary tumors in mice. *Proc. Natl. Acad. Sci. USA* **67**, 377-384.

Bernadini GL, Gu X, German DC (1991) Nucleus A10 dopaminergic neurons in inbred mouse strains: firing rate and autoreceptor sensitivity are independent of the number of cells in the nucleus. *Brain Res. Bull.* **27**, 163-168.

Bhathal PS, Jordan TW, Mackay IR (1990) Mouse strain differences in susceptibility to sporidesmin-induced biliary tract injury. *Liver* **10**, 193-204.

Bhol KC, Mukherjee RM, Mehra S, Jalan KN, Maitra TK, Haldar DP (1990) Experimental hepatic amoebiasis in inbred mice. *Indian Journal of Pathology & Microbiology* **33**, 364-367.

Blizard DA, Welty R (1971) Cardiac activity in the mouse: strain differences. *J. Comp. Physiol. Psychol.* **77**, 337-344.

Blomberg B, Geckeler WR, Weigert M (1972) Genetics of the antibody response to Dextran in mice. *Science* **177**, 178-180.

Boucher DW, Hayashi K, Rosenthal J, Notkins AL (1975) Virus-induced diabetes mellitus. III. Influence of sex and strain of host. *J. Infect. Dis.* **131**, 462-466.

Bovet D, Bovet-Nitti F, Oliverio A (1966) Effects of nicotine on avoidance conditioning of inbred strains of mice. *Psychopharmacologia* **10**, 1-5.

Braley HC, Freeman MJ (1971) Strain differences in antibody plaque-forming cell responses in inbred mice to pneumococcal polysaccharide. *Cell. Immunol.* **2**, 73-81.

Brenner GJ, Cohen N, Moynihan JA (1994) Similar immune response to nonlethal infection with herpes simplex virus-1 in sensitive (BALB/c) and resistant (C57BL/6) strains of mice. *Cell. Immunol.* **157**, 510-524.

Brown AM (1965) Pharmacogenetics in the mouse. *Lab. Anim. Care* **15**, 111-118.

Castro AP, Aguas AP, Silva MT (1993) Adjuvant treatment increases the resistance to *Mycobacterium avium* infection of Mycobacteria-susceptible BALB/c mice. *Clin. Exp. Immunol.* **92**, 466-472.

Cerny J, McAlack RF, Sajid MA, Friedman H (1971) Genetic differences in the immunocyte response of mice to separate determinants on one bacterial antigen. *Nature New Biol.* **230**, 247-248.

Chiodini RJ, Buergelt CD (1993) Susceptibility of BALB/c, C57/B6 and C57/B10 mice to infection with *Mycobacterium paratuberculosis. J. Comp. Pathol.* **109**, 309-319.

Christensen LR, Wolf GL, Matanic B, Bond E, Wright E (1963) Accidental chloroform poisoning of BALB/cAnNIer mice. Z. *Versuchstierk*. **2**, 135-140.

Ciranello RD, Barchas R, Kessler S, Barchas JD (1972) Catecholamines: strain differences in biosynthetic enzyme activity in mice. *Life Sci.* **11**, 565-572.

Dagg CP (1966) Teratogenesis. In: *Biology of the laboratory mouse*. 2nd ed. (Green EL, ed). New York: McGraw-Hill, pp. 309-328.

Daniel WL (1976) Genetics of murine liver and kidney arylsulfatase B. *Genetics* **82**, 477-491.

DeFries JL, McClearn GE (1970) Social dominance and Darwinian fitness in the laboratory mouse. *Am. Naturalist* **104**, 408-411.

Di Pauli R (1972) Genetics of the immune response. I. Differences in the specificity of antibodies to lipopolysaccharides among different strains of mice. *J. Immunol.* **109**, 394-400.

Dietz M, Rick MA (1972) Effect of host strain and H-2 type on spontaneous regression of murine leukemia virus. *Int. J. Cancer* **10**, 99-104.

Dorf ME, Dunham EK, Johnson JP, Benacerraf B (1974) Genetic control of the immune response: the effect of non-H-2 linked genes on antibody production. *J. Immunol.* **112**, 1329-1336.

Dragani TA (1979) Analysis of tumor incidence in BALB/c mice used as controls in carcinogenicity experiments. *Tumori* **65**, 665-675.

Eaton GJ (1972) Intestinal helminths in the mouse. *Lab. Anim. Sci.* **22**, 850-853.

Ebbesen P (1971) Reticulosarcoma and amyloid development in BALB/c mice inoculated with syngeneic cells from young and old donors. *J. Natl. Cancer Inst.* **47**, 1241-1245.

Epe C, Sabel T, Schnieder T, Stoye M (1994) The behavior and pathogenicity of Toxacara canis larvae in mice of different strains. *Parasitology Research* **80**, 691-695.

Erickson RP (1976) Strain variation in spermatazoal-glucuronidase in mice. *Genet. Res.* **28**, 139-145.

Fahey JL (1965) Differences in the electrophoretic mobility of antibody from inbred strains of mice. *J. Immunol.* **94**, 819-823.

Fawdington E, Festing MFW. Mouse strain differences in balsa wood gnawing. Unpublished data.

Festing MFW (1976) Effects of marginal malnutrition on the breeding of inbred and F1 hybrid mice – a diallel study. In: *The Laboratory Animal in the Study of Reproduction.* (Antikatzides T, Ericksen S, Spiegel A, eds). pp 99-114. Gustav Fischer, Stuttgart.

Festing MFW (1997) Inbred Strains of mice. *Mouse genome* **95**, 519-686.

Festing MFW, Blackmore DK (1971) Life span of specified-pathogen-free (MRC category 4) mice and rats. *Lab. Anim.* **5** 179-192.

Fingerote RJ, Leibowitz JL, Rao YS, Levy GA (1995) Treatment of resistant A/J mice with methylprednisolone (MP) results in loss of resistance to murine hepatitis strain 3 (MHV-3) and induction of macrophage procoagulant activity (PCA). *Advances in Experimental Medicine and Biology* **380**, 89-94.

Flaks A (1968) The susceptibility of various strains of neonatal mice to the carcinogenic effects of 9, 1 0-dimethyl- 1, 2-benzanthracene. *Eur. J. Cancer* **4**, 579-585.

Frith CH, Haley TJ, Seymore BW (1975) Spontaneous epicardial mineralization in BALB/cStCrl mice. *Lab. Animal Sci.* **25**, 787.

Gaines S, Currie JA, Tully JG (1965) Factors affecting formation of incomplete Vi antibody in mice. *J. Bacteriol.* **90**, 635-642.

Ghaffar A, James K (1973) The effect of antilymphocyte antibody on the humoral immune response in different strains of mice. *Immunol.* **24**, 455-465.

Glant TT, Mikecz K, Thonar EJ-MA, Kuettner KE (1993) Immune responses to cartilage proteoglycans in inflammatory animal models and human disease. In: *Joint Cartilage Degradation* (Woessner J Jr, Howell DS, eds). New York, Basel, Hong Kong: Marcel Dekker, Inc, pp 435-473.

Gonzalez CR, Mejia MV, Paniagua J, Ortiz-Navarrete V, Ramirez G, Isibasi A (1995) Immune response to porins isolated from *Salmonella typhi* in different mouse strains. *Archives of Medical Research* **26**, S99-S103.

Goodrick CL (1975) Lifespan and the inheritance of longevity of inbred mice. *J. Gerontol*, **30**, 257-263.

Grahn D (1972) Data collection and genetic analysis in the selection and study of rodent model systems in aging. In: *Development of the Rodent as a Model System of Aging*. (Gibson S, ed.), pp 55-65. DHEW, Pub. No. (NIH) 72-121, Bethesda, MD.

Guhad FA, Jensen HE, Aalbaek B, Rycroft A, Hau J (1995) A murine model for the study of mycotic mastitis. *J. Comp. Pathol.* **113**, 315-325.

Guida JD, Fejer G, Pirofski LA, Brosnan CF (1995) Mouse adenovirus type 1 causes a fatal hemorrhagic encephalomyelitis in adult C57BL/6 but not BALB/c mice. *Journal of Virology* **69**, 7674-7681.

Gupta R, Ganguly NK, Ahuja V, Joshi K, Sharma S (1995) An ascending non-obstructive model for chronic pyelonephritis in BALC/c mice. *J. Med. Microbiol.* **43**, 33-36.

Haller O, Frese M, Rost D, Nuttall PA, Kochs G (1995) Tick-borne Thogoto virus infection in mice is inhibited by the orthomyxovirus resistance gene product Mx1. *Journal of Virology* **69**, 2596-2601.

Hansen CT, Judge FJ, Whitney RA (1973) *Catalogue of NIH rodents*. National Institutes of Health. DHEW publication (NIH) 74-606, Bethesda.

Harada M, Nagata M, Takeuchi M, Ohara T, Makino S, Watanabe A (1991) Age-dependent difference in susceptibility to IgE antibody- and IgG1 antibody-mediated passive anaphylactic shock in the mouse. *Immunological Investigations* **20**, 515-523.

Hegmann JP (1972) Physiological function and behavioural genetics. I. Genetic variance for peripheral nerve conduction velocity in mice. *Behav. Genet.* **2**, 55-67.

Heiniger HJ, Taylor BA, Hards EJ, Meier H (1975) Heritability of the phytohaemagglutinin responsiveness of lymphocytes and its relationship to leukemogenesis. *Cancer Res.* **35**, 825-831.

Hellman A, Fowler AK (1972) Studies of the blastogenic response of murine lymphocyte. III. Specific viral transformation. *Proc. Soc. Exp. Biol. Med.* **141**, 106-109.

Hessel EM, Cruikshank WW, Van Ark I., De Bie JJ, Van Esch B, Hofman G, Nijkamp FP, Center DM, Van Oosterhout AJM (1998) Involvement of IL-16 in the induction of airway hyper-respionsiveness and up-regulation of IgE in a murine model of allergic asthma. *J. Immunol.* **160**, 2998-3005.

Hessel EM, Van Oosterhout AJM, Hofstra CL, De Bie JJ, Garssen J, Van Loveren H, Verheyen AKCP, Savelkoul HFJ, Nijkamp FP (1995) Bronchoconstriction and airway hyperresponsiveness after ovalbumin inhalation in sensitized mice. *Environmental Toxicology and Pharmacology* **293**, 401-412.

Hessel EM, Zwart A, Oostveen E, Van Oosterhout AJM, Blyth DI, Nijkamp FP (1995) Repeated measurement of respiratory function and bronchoconstriction in unanaesthetized mice. J. Appl. Physiol. **79**, 1711-

Heston WE (1963) Genetics of neoplasia. In: *Methodology in mammalian genetics* (Burdette WJ, ed). San Francisco: Holden-Day, pp 247-268.

Heston WE (1968) Genetic aspects of experimental animals in cancer research. *Japanese Cancer Assoc. Gann Monograph* **5**, 3-15.

Heston WE, Vlahakis G (1971) Mammary tumours, plaques and hyperplastic alveolar nodules in various combinations of mouse inbred strains and the different lines of the mammary tumour virus. *Int. J. Cancer* **7**, 141-148.

Hilgers J, van Nie R, Ivanyi D, Hilkens J, Michalides R, de Moes J, Poort-Keesom R, Kroezen V, von Deimling O, Kominami R, Holmes R (1985) Genetic differences in BALB/c sublines. *Current Topics in Microbiol. Immunol.* **122**, 19-30.

Hill GB, Osterhout S, O'Fallon WM (1968) Variation in response to hyperbaric oxygen among inbred strains of mice. *Proc. Soc. Exp. Biol. Med.* **129**, 687-689.

Hilton J, Dearman RJ, Boylett MS, Fielding I, Basketter DA, Kimber I (1996) The mouse IgE test for the identification of potential chemical respiratory allergens: Considerations of stability and controls. *J. Appl. Toxicol.* **16**, 165-170.

Hirasawa K, Ogiso Y, Takeda M, Lee MJ, Itagaki S, Doi K (1995) Protective effects of macrophage-derived interferon against encephalomyocarditis virus-induced diabetes mellitus in mice. *Lab. Animal Sci.* **45**, 652-656.

Hoag WG (1963) Spontaneous cancer in mice. *Ann. NY Acad. Sci.* **108**, 805-831.

Hoffman HA, Rechcigl M Jr (1971) Erythrocyte catalase in inbred mice. *Enzyme* **12**, 219-225.

Howard JG, Hale C, Chan-Liew WL (1980) Immunological regulation of experimental cutaneous leishmaniasis 1. Immunogenetic aspects of susceptibility to Leishmania tropica in mice. *Parasite Immunol.* **2**, 303-314.

Huff SD, Chaykin S (1967) Genetic and androgenic control of N- methylnicotinamide oxidase activity in mice. *J. Biol. Chem.* **242**, 1265-1270.

Hummel KP, Chapman DB (1959) Visceral inversion and associated anomalies in the mouse. *J. Hered.* **50**, 9-13.

Hummel KP, Richardson FL, Fekete E (1966) Anatomy. In: *Biology of the Laboratory Mouse*, 2nd. ed. (Green EL, ed), pp. 247-307. McGraw-Hill, New York.

Ingram DK, Reynolds MA, Les EP (1982) The relationship of genotype, sex, body weight, and growth parameters to lifespan in inbred and hybrid mice. *Mech. Ageing Dev.* **20**, 253-266.

Irokanulo EAO, Akueshi CO (1995) Virulence of *Cryptococcus neoformans serotypes* A, B, C and D for four mouse strains. *J. Med. Microbiol.* **43**, 289-293.

Ishii AI, Sano M (1989) Strain-dependent differences in susceptibility of mice to experimental Angiostrongylus costaricennsis infection. *J. Helminthology* **63**, 302-306.

Jenson AB, Groff DE, McConahey PJ, Dixon FJ (1976) Transmission of murine leukemia virus (Scripps) from parent to progeny mice as determined by P30 antigenemia. *Cancer Res.* **36**, 1228-1232.

Jiao S, Cole TG, Kitchens R, Pfleger B, Schonfeld G (1990) Genetic heterogeneity of lipoproteins in inbred strains of mice: analysis by gel-permeation chromatography. *Metabolism* **39**, 155-160.

John SWM, Hagaman JR, MacTaggart TE, Peng L, Smithes O (1997) Intraocular pressure in inbred mouse strains. *Investigative Ophthalmology & Visual Science* **38**, 249-253.

Johnson AP, Tuffrey M, Taylor-Robinson D (1989) Resistance of mice to genital infection with Neisseria gonorrhoeae. *J. Med. Microbiol.* **30**, 33-36.

Jungmann P, Guenet JL, Cazenave PA, Coutinho A, Huerre M (1996) Murine acariasis: I. Pathological and clinical evidence suggesting cutaneous allergy and wasting syndrome in BALB/c mouse. *Research in Immunology* **147**, 27-38

Kalis N (1972) Transplanted tumors. *Jax Notes 410*. Jackson Laboratory, Bar Harbor, Maine.

Kanes SJ, Hitzemann BA, Hitzemann RJ (1993) On the relationship between D2 receptor density and neuroleptic-induced catalepsy among eight inbred strains of mice. *J. Pharmacol. Exp. Therapeut.* **267**, 538-547.

Kataoka Y, Haritani M, Mori M, Kishima M, Sugimoto C, Nakazawa M, Yamamoto K (1991) Experimental infections of mice and pigs with Streptococcus suis type 2. *J. Vet. Med. Sci.* **53**, 1043-1049.

Kawase E, Suemori H, Takahashi N, Okazaki K, Hashimoto K, Nakatsuji N (1994) Strain difference in establishment of mouse embryonic stem (ES) cell lines. *International Journal of Developmental Biology* **38**, 385-390.

Keetch DW, Humphrey P, Ratliff TL (1994) Development of a mouse model for nonbacterial prostatitis. *Journal of Urology* **152**, 247-250.

Kehrer JP, DiGiovanni J (1990) Comparison of lung injury induced in 4 strains of mice by butylated hydroxytoluene. *Toxicol. Lett.* **52**, 55-61.

Kennedy BP, Payette P, Mudgett J, Vadas P, Pruzanski W, Kwan M, Tang C, Rancourt DE, Cromlish WA (1995) A natural disruption of the secretory group II phospholipase A2 gene in inbred mouse strains. *J. Biol. Chem.* **270**, 22378-22385.

Kimura M, Takahasi H, Ohtake T, Sato T, Hishida A, Nishimura M, Honda N (1993) Interstrain differences in murine daunomycin-induced nephorsis. *Nephron* **63**, 193-198.

Kolaczkowska W, Chadzinska M, Seljelid R, Plytycz B (2000) Strain differences in some immune parameters can be obscured by circadian variations and laboratory routines: studies of male C57BL/6J, BALB/c and CB6F1 mice. *Lab. Anim.* **35**, 91-100.

Kölsch E, Diller E, Weber G, Davies AJS (1971) Genetics of the immune response. I. The immune response to the phage fd in high and low responding inbred strains of mice. *Eur. J. Immunol.* **1**, 201-210.

Kruckeberg WC (1991) Factors influencing variable oxidative hemolysis in inbred mouse erythrocytes. *Biochem. Biophys. Acta,* **1094**, 288-291.

Kruckeberg WC, Doorenbos DI, Brown PO (1987) Genetic differences in hemoglobin influence on erythrocyte oxidative stress hemolysis. *Blood*, **70**, 909-914.

Kurihara Y, Naito T, Obayashi K, Hirasawa M, Kurihara Y, Moriwaki K (1991) Caries susceptibility in inbred mouse strains and inheritance patterns in F1 and backcross (N2) progeny from strains with high and low caries susceptibility. *Caries Res.* **25**, 341-346.

Laskay T, Diefenbach A, Rollinghoff M, Solbach V (1995) Early parasite containment is decisive for resistance to Leishmania major infection. *Eur. J. Immunol.* **25**, 2220-2227.

Law LW (1966) Studies of thymic function with emphasis on the role of the thymus in oncogenesis. *Cancer Res.* **26**, 551-574.

Le Prevost C, Virelizier JL, Dupuy JM (1975) Immunopathology of mouse hepatitis virus type 3 infection. III. Clinical and virologic observation of a persistent viral infection. *J. Immunol.* **115**, 640-643.

Leonard A, Deknudt G, Linden G (1971) Ovulation and prenatal losses in different strains of mice. *Exp. Anim (France)* **4**, 1-6.

Les EP (1969) Personal communication and effect of pasteurized diets on lifespan of inbred mice. (Abstract 10). AALAS, Publication 69-2.

Levine S, Sowinski R (1973) Experimental allergic encephalomyelitis in inbred and outbred mice. *J. Immunol.* **110**, 139-143.

Liebelt RA, Suzuki S, Liebelt AG, Lane M (1970) Virus-like particles in chemically induced sarcomas in high- and low-leukemia strains of mice. *Cancer Res.* **30**, 2438-2448.

Lijinsky W, Thomas BJ, Kovatch RM (1991) Differences in skin carcinogenesis by methylnitrosourea between mice of several strains. *Cancer Lett.* **61**, 1-5.

Lindsay DS, Lenz SD, Cole RA, Dubey JP, Blagburn BL (1995) Mouse model for central nervous system *Neospora caninum* infections. *Journal of Parasitology* **81**, 313-315.

Lindsey JW (1996) Characteristics of initial and reinduced experimental autoimmune encephalomyelitis. *Immunogenet*. **44**, 292-297.

Livy DJ, Wahlsten D (1997) Retarded formation of the hippocampal commissure in embryos from mouse strains lacking a corpus callosum. *Hippocampus* **7**, 2-14.

Lyon MF, Rastan S, Brown SDM (1996) *Genetic variants and strains of the laboratory mouse.* 2 Volumes. Oxford, New York, Tokyo: Oxford University Press.

Malinin GI, Malinin IV (1972) Age-related spontaneous uterine lesions in mice. *J. Gerontol.* **27**, 193-196.

Marley SB, Hadley CL, Wakelin D (1994) Effect of genetic variation on induced neutrophilia in mice. *Infect. Immun.* **62**, 4304-4309.

Matyniak JE, Reiner SL (1995) T helper phenotype and genetic susceptibility in experimental lyme disease. *J. Exp. Med.* **181**, 1251-1254.

Mayberry LF, Conder GA, Bristol JR, Johnson SS, Modric S (1993) Absence of typical Nippostrongylus brasiliensis self-cure in putative BALB/c mice. *Journal of Parasitology* **79**, 962-963.

McCarthy MM, Dutton RW (1975) The humoral response of mouse spleen cells to two types of sheep erythrocytes. *J. Immunol.* **115**, 1316-1321.

McClearn GE (1965) Genotype and mouse behavior. In: *Genetics Today* (Geerts JJ, ed). Proc. XI Int. Genetics Congress, The Hague, Sept. 1964.

McClearn GE, Wilson JR, Meredith W (1970) The use of isogenic and heterogenic mouse stocks in behavioral research. In: *Contribution to behavior genetic analysis. The mouse as a prototype* (Lindzey G, Thiessen DD, eds). New York: Appleton-Century-Crofts, pp 3-32.

Meier H, Hoag WG (1966) Blood coagulation. In: *Biology of the laboratory mouse*, 2nd ed. (Green EL, ed). New York: McGraw-Hill, pp 373-376.

Meier H, MacPike AD (1968) Levels and heritability of serum ceruloplasmin activity in inbred strains of mice. *Proc. Soc. Exp. Biol. Med.* **128**, 1185-1190.

Messeri P, Oliverio A, Bovet D (1972) Relations between avoidance and activity. A diallel study in mice. *Behav. Biol.* **7**, 733-742.

Misra M, Rodriguez RE, North SL, Kasprzak KS (1991) Nickel-induced renal lipid peroxidation in different strains of mice: concurrence with nickel effect on antioxidant defence systems [published erratum appears in *Toxicol. Lett.* (1992) 60, 239]. *Toxicol. Lett.* **58**, 121-133.

Mohammadi M, Redline R, Nedrud J, Czinn S (1996) Role of the host in pathogenesis of Helicobacter-associated gastritis: *H. felis* Infection of inbred and congenic mouse strains. *Infect. Immun.* **64**, 238-245.

Monroy-Ostria A, Fuentes-Fraga I, Garcia-Flores C, Favila-Castillo L (1994) Infection of BALB/c, C57Bl/6 mice and F1 hybrid CB6F1 mice with strains of *Leishmania mexicana* isolated from Mexican patients with localized or diffuse cutaneous leishmaniasis. *Archives of Medical Research* **25**, 401-406.

Morgan KT, Frith CH, Swenberg JA, McGrath JT, Zulch KJ, Crowder DM (1984) A morphologic classification of brain tumors found in several strains of mice. *J. Natl. Cancer Inst.* **72**, 151-160.

Morissette C, Francoeur C, Darmondzwaig C, Gervais F (1996) Lung phagocyte bactericidal function in strains of mice resistant and susceptible to *Pseudomonas aeruginosa*. *Infect. Immun.* **64**, 4984-4992.

Morissette C, Skamene E, Gervais F (1995) Endobronchial inflammation following *Pseudomonas aeruginosa* infection in resistant and susceptible strains of mice. *Infect. Immun.* **63**, 1718-1724.

Moumaris M, Sestier C, Miltgen F, Halbreich A, Gentilini M, Sabolovic D (1995) Effect of fatty acid treatment in cerebral malaria-susceptible and nonsusceptible strains of mice. *Journal of Parasitology* **81**, 997-999.

Muthing J (1997) Neutral glycosphingolipids and gangliosides from spleen T lymphoblasts of genetically different inbred mouse strains. *Glycoconjugate Journal* **14**, 241-248.

Myers DD (1978) Review of disease patterns and life span in aging mice: Genetic and environmental interactions. *Birth defects: Original article series* **14**, 43-51.

Myers DD, Meier H, Huebner RJ (1970) Prevalence of murine C-type RNA virus group specific antigen in inbred strains of mice. *Life Sci.* **9**, 1071-1080.

Nagasawa H, Miyamoto M, Fujimoto M (1973) Reproductivity in inbred strains of mice and project for their efficient production. *Exp. Animals (Japan)* **22**, 119-126.

Nakaya K, Nakao M, Ito A (1997) *Echinococcus multilocularis:* Mouse strain difference in hydatid development. *J. Helminthology* **71**, 53-56.

Niewiesk S, Brinckmann U, Bankamp B, Sirak S, Liebert UG, Ter Meulen V (1993) Susceptibility to measles virus-induced encephalitis in mice correlates with impaired antigen presentation to cytotoxic T lymphocytes. *Journal of Virology* **67**, 75-81.

Nikulina EM, Klimek V (1993) Strain differences in clonidine-induced aggressiveness in mice and its interaction with the dopamine system. *Pharmacol. Biochem. Behav.* **44**, 821-825.

Nikulina EM, Skrinskaya JA, Popova NK (1991) Role of genotype and dopamine receptors in behaviour of inbred mice in a forced swimming test. *Psychopharmacology* **105**, 525-529.

Nishi Y, Hasegawa MM, Inui N (1993) Genetic variations in baseline and ultraviolet light-induced sister chromatid exchanges in peritoneal lymphocytes among different mouse strains. *Mutation Research - Fundamental and Molecular Mechanisms of Mutagenesis* **286**, 145-154.

Nishioka Y. (1987) Y-chromosomal DNA polymorphism in mouse inbred strains. *Genet. Res.* **50**, 69-72.

Noonan FP, Hoffman HA (1994) Susceptibility to immunosuppression by ultraviolet B radiation in the mouse. *Immunogenet*. **39**, 29-39.

Ogunremi O, Tabel H (1995) Genetics of resistance to *Trypanosoma congolense* in inbred mice: Efficiency of apparent clearance of parasites correlates with long-term survival. *Journal of Parasitology* **81**, 876-881.

Olsson M, Lindahl G, Ruoslahti E (1977) Genetic control of alpha-fetoprotein synthesis in the mouse. *J. Exp. Med.* **145**, 819-827.

Paul WE, Yoshida T, Benacerraf B (1970) Genetic control of the specificity of anti-DNP antibodies. II. Differences in the specificity of anti-DNP antibody produced by several inbred strains of mice. *J. Immunol.* **105**, 314-321.

Peacock AC, Gelderman AH, Ragland RH, Hoffman HA (1967) Haptoglobin levels in serum of various strains of mice. *Science* **158**, 1703-1704.

Perry LL, Lodmell DL (1991) Role of CD4+ and CD8+ T cells in murine resistance to street rabies virus. *J. Virol.* **65**, 3429-3434.

Pinchuck P, Maurer PH (1965) Antigenicity of polypeptides (poly alpha amino acids). XVI. Genetic control of immunogenicity of synthetic polypeptides in mice. *J. Exp. Med.* **122**, 673-679.

Plant J, Glynn AA (1974) Natural resistance to Salmonella infection, delayed hypersensitivity and Ir genes in different strains of mice. *Nature* **248**, 345-347.

Potter M (1972) Immunoglobulin-producing tumors and myeloma proteins of mice. *Physiol. Rev.* **52**, 631-719.

Potter M (1985) The BALB/c mouse. In: *Current Topics in Microbiol. Immunol.* **122**. Berlin, New York, Tokyo: Springer-Verlag.

Potter M, Mushinski EB, Wax JS, Hartley J, Mock BA (1994) Identification of two genes on chromosome 4 that determine resistance to plasmacytoma induction in mice. *Cancer Res.* **54**, 969-975.

Price P, Eddy KS, Papadimitriou JM, Faulkner DL, Shellam GR (1991) Genetic determination of cytomegalovirus-induced and age-related cardiopathy in inbred mice. Characterization of infiltrating cells. *Am. J. Pathol.* **138**, 59-67.

Rao JV, Swamy AN, Yamin S (1991) In vitro brain acetylcholinesterase response among three inbred strains of mice to monocrotophos. *Journal of Environmental Science & Health - Part B: Pesticides Food Contaminants & Agricultural Wastes* **26**, 449-458.

Robson HG, Vas SI (1972) Resistance of mice to Salmonella typhimurium. *J. Infect. Dis.* **126**, 378-380.

Roderick TH (1963) The response of twenty-seven inbred strains of mice to daily doses of whole-body X-irradiation. *Radiation Res.* **20**, 631-639.

Roderick TH, Wimer RE, Wimer CC, Schwartzkroin PA (1973) Genetic and phenotypic variation in weight of brain and spinal cord between inbred strains of mice. *Brain Res.* **64**, 345-353.

Rodgers DA (1966) Factors underlying differences in alcohol preference among inbred strains of mice. *Psychosomat. Med.* **28**, 498-513.

Rodrigue L, Lavoie MC (1996) Comparison of the proportions of oral bacterial species in BALB/c mice from different suppliers. *Lab. Anim.* **30**, 108-113.

Rowland EC, Lozykowski MG, McCormick TS (1992) Differential cardiac histopathology in inbred mouse strains chronically infected with *Trypanosoma cruzi*. *Journal of Parasitology* **78**, 1059-1066.

Royce JR (1972) Avoidance conditioning in nine strains of inbred mice using optimal stimulus parameters. *Behav. Genet.* **2**, 107-110.

Royce JR, Yeudall LT, Poley W (1971) Diallel analysis of avoidance conditioning in inbred strains of mice. *J. Comp. Physiol. Psychol.* **76**, 353-358.

Rubinstein P, Liu N, Strenn EW, Decary F (1974) Electrophoretic mobility and agglutinability of red blood cells: a `new' polymorphism in mice. *J. Exp. Med.* **139**, 313-322.

Russell ES, Neufeld EF, Higgins CT (1951) Comparison of normal blood picture of young adults from 18 inbred strains of mice. *Proc. Soc. Exp. Biol. Med.* **78**, 761-766.

Sakagami T, Dixon M, ORourke J, Howlett R, Alderuccio F, Vella J, Shimoyama T, Lee A (1996) Atrophic gastric changes in both *Helicobacter felis* and *Helicobacter pylori* infected mice are host dependent and separate from antral gastritis. *Gut* **39**, 639-648.

Sampugna J, Clements J, Carter TP, Campagnoni AT (1975) Comparison of lipids in total brain tissue from five mouse genotypes. *J. Neurobiol.* **6**, 259-266.

Sass B, Peters RL, Kelloff GJ (1976) Differences in tumor incidence in two substrains of claude BALB/c (BALB/CfCd) mice, emphasizing renal, mammary, pancreatic and synovial tumors. *Lab. Animal Sci*. **26**, 736-741.

Sato SI, Takizawa H, Inui N (1993) Mouse strain differences in induction of micronuclei by base analogues and nucleosides. *Mutation Research - Mutation Research Letters* **301**, 45-49.

Satoh M, Kumar A, Kanwar YS, Reeves WH (1995) Anti-nuclear antibody production and immune-complex glomerulonephritis in BALB/c mice treated with pristane. *Proc. Natl. Acad. Sci. USA* **92**, 10934-10938.

Scheller LF, Wirtz RA, Azad AF (1994) Susceptibility of different strains of mice to hepatic infection with Plasmodium berghei. *Infect. Immun.* **62**, 4844-4847.

Schlager G (1968) Kidney weight in mice: strain differences and genetic determination. *J. Hered.* **59**, 171-174.

Schlager G, Dickie MM (1967) Spontaneous mutations and mutation rates in the house mouse. *Genetics* **57**, 319-330.

Schlager G, Weibust RS (1967) Genetic control of blood pressure in mice. *Genetics* **55**, 497-506.

Schlom J, Michalides R, Kufe D, Hehlmann R, Spiegelman S, Bentvelzen P, Hageman P (1973) A comparative study of the biological and molecular basis of murine mammary carcinoma. A model for human breast cancer. *J. Natl. Cancer Inst.* **51**, 541-551.

Schwartz WJ, Zimmerman P (1990) Circadian timekeeping in BALB/c and C57BL/6 inbred mouse strains. *Journal of Neuroscience* **11**, 3685-3694.

Scott P, Eaton A, Gause WC, Zhou XD, Hondowicz B (1996) Early IL-4 production does not predict susceptibility to *Leishmania major*. *Experimental Parasitology* **84**, 178-187.

Sekirina GG, Neganova IE (1995) The microenvironment created by nonblocking embryos in aggregates may rescue blocking embryos via cell-embryo adherent contacts. *Zygote* **3**, 313-324.

Shepard CC, Habas JA (1967) Relation of infection to tissue temperature in mice infected with Mycobacterium marinum and Mycobacterium leprae. *J. Bacteriol.* **93**, 790-796.

Shimosato K, Saito T, Marley RJ (1994) Genotype-specific blockade of cocaine-induced weight loss by the protein synthesis inhibitor, anisomycin. *Life Sciences* **55**, PL293-PL299.

Silverstein E (1961) Urine specific gravity and osmolality in inbred strains of mice. *J. Appl. Physiol.* **16**, 194-196.

Sinha YM, Salocks CB, Vanderlaan WP (1975) Prolactin and growth hormone levels in different inbred strains of mice: patterns in association with estrous cycle, time of day and perphenazine stimulation. *Endocrinol*. **97**, 1112-1122.

Smith AM (1976) The effects of age on the immune response to type III pneumococcal polysaccharide (SIII) and bacterial lipopolysaccharide (LPS) in BALB/c, SJL/J and C3H mice. *J. Immunol.* **116**, 469-474.

Smith GS, Pilgrim HI (1971) Spontaneous neoplasms in germfree BALB/cPi mice. *Proc. Soc. Exp. Biol. Med.* **138**, 542-544.

Southwick CH, Clark LH (1966) Aggressive behaviour and exploratory activity in fourteen mouse strains. *Am. Zool.* **6**, 559.

Srivastava RAK (1995) Increased apoB100 mRNA in inbred strains of mice by estrogen is caused by decreased RNA editing protein mRNA. *Biochemical and Biophysical Research Communications* **212**, 381-387.

Steinberg AD, Pincus T, Talal N (1971) The pathogenesis of autoimmunity in New Zealand mice. III. Factors influencing the formation of anti-nucleic acid antibodies. *Immunol.* **20**, 523-531.

Storer J. B. (1966) Longevity and gross pathology at death in 22 inbred strains of mice. *J. Gerontol.* **21**, 404-409.

Storer JB (1967) Relation of lifespan to brain weight, body weight and metabolic rate among inbred mouse strains. *Exp. Gerontol.* **2**, 173-182.

Styrna J, Imai HT, Moriwaki K (1991) An increased level of sperm abnormalities in mice with a partial deletion of the Y chromosome. *Genet. Res.* **57**, 195-199.

Sundberg JP, Adkison DL, Bedigian HG (1991a) Skeletal muscle rhabdomyosarcomas in inbred laboratory mice. *Vet. Pathol.* **28**, 200-206.

Sundberg JP, Hanson CA, Roop DR, Brown KS, Bedigian HG (1991b) Myoepitheliomas in inbred laboratory mice. *Vet. Pathol.* **28**, 313-323.

Suran AA (1973) Hypoxanthine-guanine phorphoribosyl transferase in brains of mice. Regional distribution in seven inbred mouse strains. *Life Sci.* **13**, 1779-1788.

Tanioka Y, Esaki K (1971) Strain differences in mortality of anaphylactic shock in mice-challenging by intravenous injection. *Exp. Animals (Japan)* **20**, 127-130.

Taylor BA (1976) Genetic analysis of susceptibility to isoniazid-induced seizures in mice. *Genetics* **83**, 373-377.

Tennant JR (1965) Susceptibility and resistance to viral leukemogenesis in the mouse. I. Biological definition of the virus. *J. Natl. Cancer Inst.* **34**, 625-632.

Thomas PE, Hutton JJ, Taylor BA (1973) Genetic relationship between aryl hydrocarbon hydroxylase inducibility and chemical carcinogen induced skin ulceration in mice. *Genetics* **74**, 655-659.

Thompson WR (1953) The inheritance of behaviour: behavioural differences in fifteen mouse strains. *Can. J. Psychol.* **7**, 145-155.

Toda S, Kimura M, Tohya K (1989) Strain differences in histamine release from mouse peritoneal mast cells induced by compound 48/80 or A23187. *Jikken Dobutsu - Experimental Animals* **38**, 135-137.

Tsubura A, Senzaki H, Oyaizu T, Fujita Y, Morii S (1993) Strain differences in neoplastic response to DMBA-induced uterine vascular tumors in mice. *International Journal of Oncology* **2**, 927-930.

Tuli JS, Smith JA, Morton DB (1995a) Cortisone, adrenal and spleen weight in mice after tail bleeding, and its effect on nearby mice. *Lab. Anim.* **29**, 90-95.

Tuli JS, Smith JA, Morton DB (1995b) Stress measurement in mice after transportation. *Lab. Anim.* **29**, 132-138.

Tunnicliff G, Wimer CC, Wimer RE (1973) Relationships between neurotransmitter metabolism and behaviour in seven inbred strains of mice. *Brain Res.* **61**, 428-434.

Vacha J (1975) Blood volume in inbred strain BALB/c, CBA/J and C57BL/10 mice determinated by means of 59Fe-labelled red cells and 59Fe bound to transferin. *Tché. Physiol. Bohemosl.* **24**, 413-420.

Valatx JL, Bugat R (1974) Facteurs gènètiques dans le determinisme du cycle veille-sommeil chez la souris. *Brain Res.* **69**, 315-330.

Van den Akker TW, Tio-Gillen AP, Benner R, Zurcher C, Radl J (1987) The influence of H-2 genetic factors on the development of benign monoclonal gammopathy in ageing H-2 congenic C57BL and BALB mice. *Immunology* **61**, 403-408.

Van Iersel M, Walters DG, Price RJ, Lovell DP, Lake BG (1994) Sex and strain differences in mouse hepatic microsomal coumarin 7- hydroxylase activity. *Food and Chemical Toxicology* **32**, 387-390.
Van Zwieten MJ, Frith CH, Nooteboom AL, Wolfe HJ, Delellis RA (1983) Medullary thyroid carcinoma in female BALB/c mice. *Am. J. Pathol.* **110**, 219-229.
Verley FA, Grahn D, Leslie WP, Hamilton KF (1967) Sex ratio of mice as possible indicator of mutation rate for sex-linked lethals. *J. Hered.* **58**, 285-290.
Vladutiu G, Rose NR (1971) Genetic influence on experimental autoimmune thyroiditis in mice. *Fed. Proc.* **30**, 306.
Waalkes MP, Rehm S (1994) Carcinogenic and chronic toxic effects of single and multiple subcutaneous doses of cadmium chloride in male BALB/c mice. *Toxic Substances Journal* **13**, 97-111.
Wahlsten D (1973) Contribution of the genes albinism (c) and retinal degeneration (rd) to a strain-by-training procedure interaction in avoidance learning. *Behav. Genet.* **3**, 303-316.
Wahlsten D, Bulman-Fleming B. (1994) Retarded growth of the medial septum: A major gene effect in acallosal mice. *Developmental Brain Research* **77**, 203-214.
Wahlsten D, Hudspeth WJ and Bernhardt K (1975) Implications of genetic variation in mouse brain structure for electrode placement by stereotoxic surgery. *J. Comp. Neurol.* **162**, 519-532.
Wahlsten D. (1974) Heritable aspects of anomalous myelinated fibre traits in the forebrain of the laboratory mouse. *Brain Res.* **68**, 1-18.
Wang Y, Burnier M, Detrick B, Hooks JJ (1996) Genetic predisposition to coronavirus-induced retinal disease. *Investigative Ophthalmology & Visual Science* **37**, 250-254.
Waymouth C (1973) Erythrocyte sodium and potassium levels in normal and anaemia mice. *Comp. Biochem. Physiol.* **44A**, 751-766.
Whitmire CE, Salerno RA, Rabstein LS, Heubner RJ, Turner HC (1971) RNA tumour-virus antigen expression in chemically induced tumours. Virus-genome specified common antigens detected by complement fixation in mouse tumours induced by 3-methylcholanthrene. *J. Natl. Cancer Inst.* **47**, 1255-1265.
Williams NM, Timoney PJ (1994) Variation in susceptibility of ten mouse strains to infection with a strain of Ehrlichia risticii. *J. Comp. Pathol.* **110**, 137-143.
Willott JF, Erway RC, Archer JR, Harrison DE (1995) Genetics of age-related hearing loss in mice. II. Strain differences and effects of caloric restriction on cochlear pathology and evoked response thresholds. *Hearing Research* **88**, 143-155.
Wimer RE, Wimer CC, Roderick TH (1969) Genetic variability in forebrain structures between inbred strains of mice. *Brain Res.* **16**, 257-264.
Wragg LE, Speirs RS (1952) Strain and sex differences in response of inbred mice to adrenal cortical hormones. *Proc. Soc. Exp. Biol. Med.* **80**, 680-684.
Xidieh CF, Singer-Vermes LM, Calich VLG, Burger E (1994) Plasma amylase levels as a marker of disease severity in an isogenic murine model of paracoccidioidomycosis. *Journal of Medical and Veterinary Mycology* **32**, 37-45.
Yuhas JM, Storer JB (1969) On mouse strain differences in radiation resistance: hematopoietic death and the endogenous colony-forming unit. *Radiation Res.* **39**, 608-622.
Zaharia MD, Kulczycki J, Shanks N, Meaney MJ, Anisman H (1996) The effects of early postnatal stimulation Morris water-maze acquisition in adult mice: Genetic and maternal factors. *Psychopharmacology* **128**, 227-239.
Zarrow MX, Christenson CM, Eleftheriou BC (1971) Strain differences in the ovulatory response of immature mice to PMS and to the pheromonal facilitation of PMS-induced ovulation. *Biol. Reprod.* **4**, 52-56.

RMS0112-EU-EN-02-PS-4357/091