Commonly Used Strains of Rats

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Sprague Dawley®
TRADITIONAL OUTBRED RATS

- Used in virtually all disciplines of biomedical research including toxicology and pharmacology
- Excellent reproductive performance makes the SD rat a good model for generating timed pregnant females
- **Origin:** The Sprague Dawley outbred model was developed by Sprague Dawley, Inc. NIH received stock from Sprague Dawley, Inc in 1945. The rats are maintained as an outbred closed colony. The rats were refreshed with NIH Genetic Resource stock in 1998.
- **Color:** Albino

Long Evans
TRADITIONAL OUTBRED RATS

- Also known as the Hooded rat
- Used for neurological, toxicological and ophthalmologic studies
- Reported higher resistance to respiratory problems than outbred albino rats, making the Long Evans rat the preferred stock for surgical procedures requiring extended use of inhalant anesthetics.
- **Origin:** The Long Evans outbred model was developed by Dr. Long and Dr. Evans in 1915 by intercrossing Wistar Institute white female rats to wild grey male rats. Simonsen Laboratories received stock from the University of California Berkeley in 1949. The rats were derived by embryo transfer in 1975. The rats were derived by embryo transfer in August 1998 by Taconic.
- **Color:** Black-Hooded

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Spontaneously Hypertensive TRADITIONAL OUTBRED RATS

- Derived from the Okamoto-Aoki Strain
- Males exhibit average systolic blood pressures greater than 200 mm Hg by 3-4 months of age
- The SHR is generally used for studies in hypertension and cardiovascular research
- **Origin:** The Spontaneously Hypertensive outbred model was developed by NIH in 1966 from Wistar Kyoto outbred stock from Okamoto, Kyoto School of Medicine. Taconic received stock at F35 from the NIH Animal Genetic Resource in 1972. The rats were derived by embryo transfer in 1984.

Wistar Kyoto
TRADITIONAL OUTBRED RATS

- Often used as the normotensive control for the SHR
- Males exhibit systolic blood pressures of 125 to 140 mmHg at 10 weeks of age
- A partially inbred model (F10) which retains some residual heterozygosity
- **Origin:** Origin: NIH received the Wistar Kyoto inbred/outbred model as an inbred from the Kyoto School of Medicine in 1971. Taconic received stock at F10 from the NIH Animal Genetic Resource in 1974. The rats were derived by caesarean in 1982 and are maintained as a randomly bred closed colony.
- **Color:** Albino

Fischer 344
TRADITIONAL INBRED RATS

- Used for cancer research, toxicology and aging studies
- Inbred rat model of choice for the National Toxicology Program's Carcinogen Bioassay Program and the National Institute of Aging
- **Origin:** Heston received stock from Curtis of Columbia University Institute for Cancer Research in 1949. NIH received stock from Heston in 1951. Taconic received axenic breeders at F143 from the NIH Animal Genetic Resource in 1984. The rats were refreshed at F173 by incrossing rats received from the NIH Genetic Resource in 1997 to preserve genetic continuity. The Taconic foundation colony was at F190 in 2005.
- **Color:** Albino

Brown Norway
TRADITIONAL INBRED RATS

- A well-defined inbred rat widely used for immunology studies and for testing autoimmune drug effects and immunosuppressive drugs
- Used in autoimmune studies owing to its susceptibility to several chemically induced autoimmune syndromes such as polyarthritis or T-helper cell autoimmunity (using mercuric chloride or cyclosporin A)
- A model for male reproductive aging physiology, transplantation immunology and for studies of bone marrow cancer and graft versus host diseases
- **Origin:** M&B A/S (now Taconic Europe) received the Brown Norway inbred model at F90 from Zentralinstitut für Versuchstierzucht in Hannover Germany (Han). The rats were derived by embryo transfer in 2005 at Taconic US.
- **Color:** Brown Agouti

Normal Data for Rats

Environmental Data	**Room Temp.** 21-27 °C	**Humidity** 45-55%	**Light** 12 hrs/day	**Litter Material** Shavings, beet pulp, corn cob, commercial bedding		
Biological Values						
Blood Chemical Composition Values are for plasma, except where noted	**Water** 92-94 gm/100ml	**Calcium** 6.2 mEq/L	**Sodium** 144 mEq/L	**Chloride** 110 mEq/L	**Phosphorus** 5.9 mg/100ml	**Potassium** 5.9 mEq/L
	Magnesium 1.6 mg/100ml	**Cholesterol** 28-76 mg/100ml	**Glucose** 56-76 mg/100ml (whole blood)	**Serum Protein** 6.3 gm/100ml	**Albumin** 3.4-4.3 gm/100ml	**Globulin** 1.8-2.5 gm/100ml
Oxygen Consumption and Body Temperature	**Observed Weight** 250 gm	**Temperature** 38.2 °C	**Oxygen Consumption** 0.88 mlO_2/gm/hr	**Breathing Rate** 94/minute (75-115)	**Heart Rate Adult** 382/minute (261-600)	**Heart Rate Newborn** 161/minute (81-241)
Hematological Values	**Whole Blood Volume (T-1824 dye)** 58 ml/kg	**Clotting Time** 20 sec.	**RBC Life Span** 45-68 days	**RBC Diameter** 6.8 microns	**RBC Rate of Sedimentation** 0.7-1.8 mm/hr	
	Blood pH 7.35	**RBC** 7.2-9.6 10^6/mm^3	**Hematocrit** 46 ml/100ml	**Platelets** 706-796 10^3/mm^3	**Hb** 14.8 gm/100ml	
Total and Differential White Blood Cell Counts	**Leucocytes** 14.0 10^3/mm^3	**Neutros** 3.1 10^3/mm^3	**Eosinos** 0.3 10^3/mm^3	**Basos** 0.10 10^3/mm^3	**Lymphos** 10.2 10^3/mm^3	**Monos** 0.30 10^3/mm^3
Life Cycle Information						
	Weight Adult Male 300-400 gm	**Weight Adult Female** 250-300 gm	**Weight at Birth** 5-6 gm	**Breeding Age Male** 100 days 300 gm	**Breeding Age Female** 100 days 200 gm	**Estrus Cycle** 5 days
	Gestation 20-22 days 21 days avg.	**Weaning Age** 21 days 40-50 gm	**Litter Size** 8-12	**Rebreed After Parturition** Immediately	**Breeding Life Male** 1 year	**Breeding Life Female** 1 year