National Institute on Aging

Aged Rodent Colonies

The National Institute on Aging (NIA), part of the National Institutes of Health (NIH), maintains colonies of barrier-raised rodents under contractual arrangement with commercial vendors. All colonies are barrier maintained and Specific Pathogen-Free (SPF). Animals from the NIA aged rodent colonies are available to investigators at academic and non-profit research institutions. The NIA aged rodent colonies are a limited resource developed for use in aging research. They are not available for use as a general source of adult animals for unrelated areas of research.

Please Note: Beginning in late 2005 or early 2006, rodents will be provided under contracts with three different contractors – Harlan Sprague Dawley, Inc. (Harlan), Taconic Farms, Inc (Taconic), and Charles River Laboratories (CRL). Information on the source of specific strains and ages is provided in section F and up-dates will be posted on our website as more information becomes available.

A. Contact Information

Biological Resources Branch (BRB)
National Institute on Aging
7201 Wisconsin Ave. / GW 2C231
Bethesda, MD 20892

Program Assistant in charge of the order desk: Heidi Brogdon
Phone: 301-496-0181
FAX: 301-402-5997

Nancy L. Nadon, Ph.D., Head, Biological Resources Branch
Phone: 301-496-0181
FAX: 301-402-5997

All email correspondence regarding rodent resource orders should be sent to rodents@nia.nih.gov.

This handbook is also available on the web –
http://www.nia.nih.gov/ResearchInformation/ScientificResources/AgedRodentColoniesHandbook/.

Prices Effective July 1, 2005

B. Available Strains

Inbred Rats:	Fischer 344 (F344) Brown Norway (BN)
Hybrid Rats:	F344xBN F1 (F344BN)
Inbred Mice:	BALB/cBy CBA C57BL/6 DBA/2
Hybrid Mice:	CB6F1 (BALB/cBy x C57BL/6) B6C3F1 (C57BL/6 x C3H) B6D2F1 (C57BL/6 x DBA/2) Four-way cross mice (CB6F1 x C3D2F1 (C3H x DBA/2))
Caloric Restricted Rats:	F344 BN F344BN
Caloric Restricted Mice:	C57BL/6 B6D2F1

(Entry of mice is expected to begin in late 2005 so old CR mice will not be available until 2007)

We strive to have animals available out to at least the 50% survival age, but availability fluctuates due to changes in demand. An idea of the oldest available for each strain is available at http://www.nia.nih.gov/ResearchInformation/ScientificResources/OldestRodentColonies.htm, but the ages listed on this website are up-dated monthly and are intended only as an approximation. Contact the order desk for availability of specific strain/gender/ages.

C. Ordering Instructions

- All orders for NIA rodents are placed through the **NIA ONLY**. Orders must be submitted by FAX (301-402-5997) or e-mail (rodents@nia.nih.gov) (email is preferred), and all inquiries about the status of orders must be directed to the NIA.

- Payment can be by Purchase Order, an institutional blanket Purchase Order to the contractor, Mastercard or VISA. Invoices are sent after the animals are shipped – there is no pre-payment of orders.

- The purchase order (P.O.) should be made out to the contract facility. Invoices are sent by the contractor providing the animals and payment is to be made to the contractor's standard billing address:
  - Harlan Sprague Dawley, 3565 Paysphere Circle, Chicago IL 60674
  - Taconic Farms, Inc., Accounting Department, 273 Hover Ave., Germantown NY 12526
  - Charles River Laboratories, Inc., GPO Box 27812, New York, NY 10087-7812

- By accepting delivery of the animals, you are accepting these terms. NIA can refuse to take orders from customers with outstanding invoices. Payment is in United States Dollars only.

- Complete orders received by NIA no later than **Noon Tuesday ET** can usually expect next week delivery, dependent on availability. Orders must be submitted on the NIA Order Form by email (preferred) or FAX. All information requested on the order form must be provided. Include the NIH grant number if applicable and make special note if the order is part of a pilot study or dissertation research support award. Orders may be submitted for future shipping, but animals will only be reserved if the order is complete, including P.O. # and desired delivery date(s) or age(s). Type or print clearly – illegible orders will be returned.

- Animals are sold by age, not weight, and ages are stated in 1 month intervals only; all animals born within a calendar month are considered to be the same age, so date of birth (DOB) is given as month/year. Unless retired breeders are expressly stated when ordering F344 males, virgin animals will be shipped.

- Acknowledgements of orders will be faxed or emailed to the contact person for review. If you do not receive an acknowledgement within 2 working days, contact the order desk as your order may not have been received. Contact our office immediately if you notice any discrepancies between the order you place and the order acknowledgement. **The investigator/purchaser will be responsible for incorrectly placed orders that are not corrected through this process.** We will email or phone the contact person if there is any difficulty filling the order.

- Changes to or cancellations of orders must be made no later than the Thursday before the delivery date, 10 AM ET.

- Veterans Affairs customers that bill to a VA must be approved every fiscal year by the Office of the Veterans Affairs, Chief, Veterinary Medical Branch, before animals can be purchased. These approvals must be renewed each year.

- Orders for mid-December/early-January delivery should be placed early in December. The BRB is closed from Christmas Eve through New Year's Day. No deliveries will be scheduled the weeks of Christmas and New Year's Day.

- Please note that some of the barriers housing NIA colonies are positive for Helicobacter. If your facility requires animals be from a Helicobacter-free barrier, you must make that request when you submit your order.

- Note that since the fall of 2003, DBA/2 males at Harlan are provided with Shepherd Shacks® in their cages, which has significantly reduced aggression against cage mates.

NOTICE: **If there are any problems regarding the status of animals upon arrival, you must contact the NIA BRB office within 48 hours of their arrival.**

D. Price Schedule – Aging Colonies

The following price schedule applies to animals from the standard aging colonies, which are ad lib fed and group housed. Pricing for the caloric restricted colony (caloric restricted and ad lib controls) follows in section E. Retired Breeders (RB) are only available for F344 Males, 9 months of age and older.

Age	**Mice**	**Rats**	**RB** (F344 Males only)
1 mo.	12.00	21.00	N/A
2 mo.	15.00	26.00	N/A
3 mo.	18.00	31.00	N/A
4 mo.	21.00	36.00	N/A
5 mo.	24.00	41.00	N/A
6 mo.	27.00	46.00	N/A
7 mo.	30.00	51.00	N/A
8 mo.	33.00	56.00	N/A
9 mo.	36.00	61.00	21.00
10 mo.	39.00	66.00	26.00
11 mo.	42.00	71.00	31.00
12 mo.	45.00	76.00	36.00
13 mo.	49.00	82.00	41.00
14 mo.	52.00	87.00	46.00
15 mo.	55.00	92.00	51.00
16 mo.	58.00	97.00	56.00
17 mo.	61.00	102.00	61.00
18 mo.	64.00	107.00	66.00
19 mo.	67.00	112.00	71.00
20 mo.	70.00	117.00	76.00
21 mo.	73.00	122.00	82.00
22 mo.	76.00	127.00	87.00
23 mo.	79.00	132.00	92.00
24 mo.	82.00	137.00	97.00
25 mo.	86.00	143.00	102.00
26 mo.	89.00	148.00	107.00
27 mo.	92.00	153.00	112.00
28 mo.	95.00	158.00	117.00
29 mo.	98.00	163.00	122.00
30 mo.	101.00	168.00	127.00
31 mo.	104.00	173.00	132.00
32 mo.	107.00	178.00	137.00
33 mo.	110.00	183.00	143.00
34 mo.	113.00	188.00	148.00
35 mo.	117.00	193.00	153.00
36 mo. and older	120.00	198.00	158.00

E. Caloric Restricted Colony

In the caloric restricted colony, rats are $12.00 per month of age and mice are $6.00 per month of age. These prices apply to both caloric-restricted (CR) and ad libitum (AL) controls from this colony. Both CR and AL are individually housed. CR is initiated at 14 weeks of age at 10% restriction, increased to 25% restriction at 15 weeks, and to 40% restriction at 16 weeks where it is maintained throughout the life of the animal. CR/AL rats are sold only by age in months, i.e. 4 months or 24 months, not by weight or age in weeks. Survival curves, food intake curves and body weights of the NIA strains have been published (Turturro et al. (1999) Growth curves and survival characteristics of the animals used in the biomarkers of aging program. J. Gerontology 54A:B492-B501).

Feeding instructions will be provided with the caloric restricted animals. If you are ordering food, please indicate how long you will maintain the animals so that the contractor can calculate how much food you will need. When food is shipped by truck, there is a flat rate freight charge of $13.00 per type of food (AL or CR). Food shipped by air freight or common carrier is subject to prevailing rates of the carrier. NIH31/NIA Fortified (for CR feeding) is available in weighed pellets at 0.5 gram intervals from 2.5 grams to 5.0 grams, at $10.00/Kg. NIH31 (for AL feeding) is only available in random weight chunk formula, at $2.00/Kg. Formulation of the diets is available from the BRB.

F. Location of colonies

Beginning in late 2005 or early 2006, the NIA aged rodent colonies will be transitioning to new contracts, utilizing three different contractors. For a period time, young and old animals may be shipped from different contractors, requiring two Purchase Orders for a single order of animals. Orders for animals from different contractor facilities must be submitted on separate completely filled out NIA order forms. The following chart indicates which contractor will house the different strains. Our website will be up-dated to show the date of birth (DOB) at which the transition is made from one contractor to another. Contact the order desk for clarification of location.

	Aging Mice	Aging F344 rats	Aging BN and F344xBN F1 rats	Caloric Restricted Rats and Mice
Current Contractor	Harlan	Harlan	Harlan	Harlan
New Contractor	Charles River Laboratories	Taconic Farms	Harlan	Charles River Laboratories
Transition Date-of-Birth	To be determined	To be determined	Not applicable	To be determined

G. Shipment of Animals

The objective for maintaining these colonies is to provide animals for aging research that are in good health, but characteristic of aging animals. Therefore, the best looking animals are not selected for shipping, but rather, animals are selected at random. This means, particularly in older animals, that you may get some "scruffy" looking animals or animals exhibiting common conditions of aging such as small tumors, cataracts, loss of hair, stiffness of limbs, etc. Tumors in particular are commonplace in older rodents. These conditions are not justification for replacement. If your

protocol requires animals free of such conditions, it is your responsibility to order enough animals to allow you to select preferred animals. You may request "No Tumors" or "No Cataracts" on the order form but that will only apply to visible tumors or cataracts. It will not guarantee that small tumors or cataracts will not be present in the animals shipped.

Occasionally, periods of high or low temperature make the air shipment of aged animals extremely risky. Animals exposed to hot or cold loading docks and airplane holds under these conditions are quite likely to die or to suffer temperature stress. When such conditions exist, we will call you to inform you of the delay of the shipment until the temperature moderates. The NIA will not ship animals by air during such weather advisories. Shipments made by environmentally controlled trucks are not affected by weather except during severe storms. If you have questions about this policy, please contact the NIA office.

To calculate shipping/transportation costs: You pay for each crate and to ship each crate. We do not mix ages or animals coming out of different barriers/areas. We recommend air shipment of caloric restricted animals for locations where truck delivery would require more than one day transit time. BALB/cBy males are currently being shipped in compartmentalized crates, maximum of 5 mice per crate, to prevent fighting. Shipping costs for each contractor are below. The maximum number of animals per crate is 6 (Harlan) or 10 (Taconic) rats or 20 mice from the aging colonies, depending on age and size, and 2 rats from the caloric restricted colony.

Harlan

U.S. Truck Crate	$11.50 each
International Air Crate	$13.50 each
Harlan Truck Freight	$28.00 per crate (subject to change)
Air Freight-Domestic	$35.00 - $80.00 per crate (subject to change)
Gel Transit Packets	$1.80 each (2 required per crate)
Water kits	$5.50 each (optional)

Taconic Farms

Taconic Transit Cage (TTC)	$18.14 each
Truck Freight	$10.76 per TTC (subject to change)
Air Freight-Domestic	$30.00 - $75.00 per crate (subject to change)
Gel Transit Packets	(included in cost of TTC)

Taconic uses poly-screened TTCs for air shipments and non-poly screened TTCs for truck shipments. Use of poly-screened TTCs for truck shipments can be requested on the order form.

Charles River Laboratories

Shipping Crate	$10.20 each
Truck Freight	$20.60 per crate (subject to change)
Air Freight-Domestic	$30.00 - $75.00 per crate (subject to change)
Gel Transit Packets	(included in cost of crate)

H. Animal Replacement Policy

The NIA will provide no-cost replacement or credit for animals that are dead on arrival or die within 48 hours of arrival. Replacements will be of the same date of birth as originally shipped. If animals are determined to be ill or injured at arrival and a replacement or credit is requested, a veterinary report must be provided. All animals are maintained in barrier conditions under a health monitoring program and are assumed to be in good health when leaving the NIA colonies. The development of tumors is normal in these animals with aging, therefore the presence of tumors is not an acceptable criteria for replacement. Likewise, a scruffy or unkempt appearance is often normal for very aged animals and is not reason for replacement or credit. Since we have no control over the conditions in the facilities into which these animals are shipped, we will not accept responsibility for their health after 48 hours of receipt. Therefore if you have any problems regarding the status of your animals upon their arrival, it is important that you contact the NIA BRB **within 48 hours of receipt**.

I. Optional Services

NIA rodents are tattooed on the tail with the month and year of birth. An independent service is available from Harlan to implant Avid Microchips under the skin, at $12.50 per animal. Harlan also provides various surgical procedures at their BioTech Center, as described on their website (http://www.harlan.com/contract%20breeding/surgical.html).

Taconic performs surgical procedures as an independent service – for prices, please go to page 34 of the Taconic Price manual – http://www.taconic.com/Product_Guide/2005_USPriceManual.pdf .

Charles River Laboratories (CRL) implants AVID Microchips as an independent service, at a total cost of $21.90 per animal. Surgical procedures are also provided by CRL as independent services and prices are on pages 32 and 33 of the CRL Research Models & Services catalog – http://www.criver.com/general/2005_Research_Model_Services_Catalog.pdf .

J. Colony Monitoring and History

NIA mice and rats are monitored on a regular basis to detect genetic changes that could result from contamination. Colony animals are also monitored quarterly for pathology and evidence of pathogens. The results of the health monitoring for animals in the same room as your shipment will be sent with every animal shipment. You may request that the health report be sent before the animals are shipped. **Please note that some of the barriers housing NIA colonies are positive for Helicobacter. If your facility requires animals be from a Helicobacter-free barrier, you must make that request when you submit your order.**

Inbred and hybrid mice in this NIA colony were derived from NIH pedigreed breeding stock in 1974 and for many years were maintained as closed inbred colonies. As mutations occur in both the NIA colony and the NIH breeding colonies, the NIA and NIH genotypes would undoubtedly drift apart. The solution to this problem is to periodically rederive NIA substrains from a common pedigreed breeding stock. One disadvantage to this procedure is that if the rederivation occurs in the middle of an ongoing research project, some differences in genotype of animals used early and late in the project may be unavoidable. Whether these differences pose a research problem or not is

largely a matter of chance, depending upon whether significant mutations have occurred and which genetic loci are involved.

Since the problems of substrain differentiation are more significant to NIA programs as a whole, NIA initiated a policy of rederivation from pedigreed stock every 6-7 years. This rederivation interval should keep substrain differentiation at a minimum and still minimize potential disruption of ongoing research. The first rederivation of the NIA mouse colonies occurred in 1983, with subsequent rederivations in 1990, 1998, and 2005. The 1990, 1998 and 2005 rederivations used Jackson Laboratory stock.

The Fischer 344 rat colony was rederived in 1990 using Harlan Sprague Dawley Inc.'s commercial pedigreed stock that had been rederived from NIH stock in 1988, and again in 1998 and 2005 using NIH stock. In September 1985, a colony of Brown Norway (BN) rats and the F1 hybrids of the F344 X BN cross was established to provide an alternative model to the Fischer 344, based on studies that showed the F344 x BN cross produced progeny with fewer detrimental pathologies than inbred strains. Rederivation of this colony occurred in 1992 and again in 1999, using BN/BiRij stock originating from TNO, The Netherlands, and F344 stock from the NIH. The last rederivation was in 2005, using stock from the NIH for both strains.

The Caloric Restricted colony currently includes three rat genotypes and two mouse genotypes maintained under conditions similar to our other colonies except that they are individually caged. Ad libitum-fed controls maintained under the same conditions as restricted animals are also available. The rats were originally derived from NIH stock, and the colony was rederived in 1998 and again in 2005, using NIH stock for both rat strains. The mice in the caloric restricted colony were rederived in 1998 and in 2005 using stock from The Jackson Laboratory.

K. Barrier Environmental Information

	Harlan	Charles River	Taconic Farms
Temperature	$72^{o} – 77^{o}$ F	$67^{o} – 73^{o}$ F	$68^{o} – 72^{o}$ F
Humidity	40-55%	35 – 55%	30-70%
Water	pH 5.8-6.0, 7-8 ppm chlorine	pH 7.0-7.5, 4-6 ppm chlorine	pH 6-8, 4-10 ppm chlorine
Light/Dark Cycle	12 hr./12 hr.	12 hr./12 hr.	12 hr./12 hr.
Bedding	Sterilized Aspen (BN, F344BN) (Harlan Product T.7083) or Tek-Fresh (mice, F344) (Harlan product T.7099)	Wood shavings	Sani-chip wood shavings
Feed	Sterilized NIH31 or NIH31-Fortified (CR animals only)	Sterilized NIH31 or NIH31-Fortified (CR animals only)	Sterilized NIH31
Caging	Aging – 3 rats or 5 mice per cage; CR – singly housed	Aging – 5 mice per cage; CR – singly housed	5 rats per cage

ORDER FORM - NIA AGED RODENT COLONIES

Orders MUST be placed by NOON ET **Tuesday** for following week delivery. We require orders to be placed by fax or email. FAX # at Order Desk 301-402-5997, Voice # 301-496-0181, email: rodents@nia.nih.gov. (emergency back up fax # 301-402-0010).
Contractor information for specific colonies:
http://www.nia.nih.gov/ResearchInformation/ScientificResources/AgedRodentColoniesHandbook/LocationofColonies.htm

Please type or print and provide all information. We can only offer following week delivery for those orders for which completed order forms are received by the deadline of Tuesday noon, Eastern time.

Principal Investigator's Name: _____

Principal Investigator's email: _____

Project title: _____

Project funding source and grant number: _____

Institution: _____

Shipping Address: _____

_____

_____

Billing Address: _____

_____

_____

Contact Person's Name: _____

FAX: _____

Phone: _____

Email: _____

P.O. # : _____ Delivery date: _____

Orders must be received by **noon Tuesday (ET)** for following week delivery.

Strain	Quantity	Age (mon)	Gender	Additional Information

Special Instructions:

REQUEST FOR NIA ANIMAL CREDIT OR REPLACEMENT

Credits / Replacements will be considered if requested within 48 hours of receipt of the animals.

PROVIDE ALL REQUESTED INFORMATION - PLEASE TYPE OR PRINT CLEARLY

DATE OF REQUEST: _____

Requesting: ☐ Credit ☐ Replacement Delivery Day Requested: _____

Principle Investigator: _____

Institution: _____

Person Requesting Credit/Replacement: _____

Title: _____ Email Address: _____

Fax Number: _____ Phone Number: _____

NIA Order Number: _____ Delivery Date Received: _____

Person who unpacked the animals: Name: _____

Email: _____ Phone: _____ Fax: _____

Please provide a detailed description of the animals upon arrival, and the condition of the containers they arrived in:

_____

_____

_____

_____

_____

_____

NOTE: Animals will be replaced at the same age as the original order, unless the customer specifically indicates the same DOB.

Gender	Strain	Quantity	Age	DOB

Please type in fields and email back as an attachment to rodents@nia.nih.gov . If you choose to fax form back to BRB, please fax it to 301-402-5997.