



NATIONAL CENTRE FOR LABORATORY ANIMAL SCIENCES – A PROFILE

Use of good quality, genetically and microbiologically defined animals is essential for reliable and reproducible experimental results and for the production and testing of drugs and vaccines. Most biomedical institutions, university departments, veterinary and agricultural institutions, vaccine producing units and pharmaceutical houses normally do not have a reliable source of good quality laboratory animals for their research and testing activities. Setting up of animal facilities for breeding of good quality animals is costly, time consuming and requires professionally qualified staff.

Systematic experimentation on animals for biomedical research began in early part of 19th century for elucidating physiological processes and study pathogenesis of diseases. In recent times animals are being used extensively for biomedical research such as testing the potency and safety of pharmaceutical and biological substances or for determination of toxicity of food additives or other potentially harmful substances. Extensive use of animals led to the development of Laboratory Animal Science. Several national and international scientific organisations are playing a very useful role for improving the conditions of laboratory animals used for biomedical research and have also introduced new techniques for such research.

National Centre for Laboratory Animal Sciences (NCLAS) is an unique organization established for spreading knowledge on the care, breeding, management and experimentation using laboratory animals in biomedical

research. The Centre has completed 47 years of its existence, this year.

The Centre started as an Unit named as Laboratory Animal Information Service (LAIS) at the Indian Cancer Research Centre, Bombay (now named as Cancer Research Institute, Mumbai) way back in 1957 with the help of UNESCO and became an unit of ICMR, New Delhi in 1959. This Unit for the first time undertook a survey on the conditions of laboratory animal care, breeding and experimentation in the country and felt the need for educating the biomedical fraternity on the proper care, breeding and maintenance of laboratory animals. This resulted in the initiation of a regular training course in laboratory animal sciences in 1968, and the publication of laboratory animal bulletins, which contained information on the laboratory animals bred, maintained and used for experimentation in various research institutions in the country. This Unit was later shifted to National Institute of Nutrition (NIN), Hyderabad in 1976, and was expanded to provide animal support to NIN's nutritional research and also provide animals to other institutes within the state and renamed as Laboratory Animal Information Service Centre (LAISC). In 1998, during the 7th Five Year Plan additional support came from the Department of Biotechnology under the Ministry of Science and Technology, Government of India, which helped the Centre to reach the current status as the National Center for Laboratory Animal Sciences - NCLAS.

The NCLAS is currently meeting the breeding and experimentation needs of over 180 biomedical Institutions in the country. A new primate facility was added to the Centre two years back for basic research and preclinical testing of drugs and vaccines using primates. Apart from breeding and supply of animals the NCLAS regularly

undertakes quality control of laboratory animal feed and checks the health and genetic background of laboratory animals under its care. It also runs regular training courses both at the junior and senior level for laboratory animal personal working in government and private biomedical institutions.

TRAINING PROGRAMMES CONDUCTED BY THE NCLAS

LABORATORY ANIMAL TECHNICIANS' TRAINING COURSE

Duration

6 Weeks (June-July every year)

Objectives

To impart training in basic and applied aspects of handling, care, breeding and management of different species of laboratory animals (such as mouse, rat, hamster, guinea pig, rabbit, monkey, etc.,) used for conducting different experiments and testing of drugs, vaccines, etc.

Category and Number of Trainees

In service candidates from different biomedical research institutions, pharmaceutical concerns, drug and vaccine producing units, university departments, etc. are selected for the course. Candidates should be matriculate, with at least 2 years' experience in an organization. Candidates from government organisation are provided a stipend of Rs.1600/- per month. Every year 12-16 candidates are trained.

Cost of the Training Programme

The training is free for candidates from Govt. and non-profit making organisations. Candidates from private organisations are charged a fee of Rs.3000/- for the whole duration of the course.

Design

The course comprises practicals, lectures, demonstrations, audio-visual programmes pertaining to the handling, care, breeding, feeding, restraining, diseases, welfare and ethics of laboratory animals.

LABORATORY ANIMAL SUPERVISORS' TRAINING COURSE

Duration

12 Weeks : (September-November every year)

Objectives

To impart training in practical and theoretical aspects of Laboratory Animal Science and Technology and orient the candidate in the basic and applied aspects of laboratory animal husbandry, care, experimentation and ethics.

Category and Number of Trainees

In service candidates with at least a bachelors' degree in biological or veterinary sciences, with at least one years' experience in a govt. or private organisation are selected for the course. Candidates from government organisations are provided a stipend of Rs.1600/- per month. Every year 10-12 candidates are trained.

Cost of the Training Programme

The training is free for candidates from govt. and non-profit making organisations. Candidates from private organisations are charged a fee of Rs.6000/- for the whole duration of the course.

Design

The course comprises of lectures, practicals, audio-visual programmes pertaining to the modern aspects of laboratory animal care, husbandry, facility management, health and genetic monitoring, nutrition, experimentation and ethical aspects.

Aims and Objectives

The Centre is working with the following aims and objectives:

- (i) Meet the research needs of the country by breeding and supplying genetically and microbiologically defined laboratory animals;
- (ii) Disseminate information on laboratory animal science and technology through human resource development by conducting training programmes, workshops and seminars and through publications;
- (iii) Conduct basic research on care, breeding and management of laboratory animals and develop animal models for biomedical research from existing as well as wild genetic pool; and
- (iv) Act as a National Reference Center on Laboratory Animal Sciences and also as a liaison between India and other International agencies.

Achievements

Service activities

- (i) On a regular basis, the NCLAS caters to 45-50 biomedical institutions (including both public and private enterprises). The Centre has so far bred and supplied over 10 lakhs laboratory animals to more than 180 biomedical research institutions in the country for basic and applied research.
- (ii) Standard laboratory animal chow based on locally available ingredients has been developed for rodents, rabbits and monkeys and is being supplied regularly to selected research institutions in the country on demand.
- (iii) The Center regularly supplies blood and blood products from laboratory animals to several research institutions locally as well as in other parts of the country.
- (iv) The Centre has so far trained over 500 individuals on various aspects of laboratory animal care, breeding, husbandry, animal experimentation, ethics under two of its regular annual training courses organized since 1968. It has also trained over 300 research scientists in the proper use of animals for experimentation under adhoc training programmes over the years.
- (v) The NCLAS has so far conducted three international and several national seminars/workshops. The Centre brought out a publication entitled "Laboratory Animals User's Guide", which is a ready reckoner for the laboratory animal planners and researchers.
- (vi) The Centre has helped in setting up new animal facilities in the country both under private and public sectors.

DETAILS REGARDING LABORATORY ANIMAL FEED

Diet Composition for Rodents (Rats, Mice & Hamsters)

Wheat flour	22.5%
Roasted Bengal gram flour	60.0%
Skim milk powder	5.0%
Casein	4.0%
Refined groundnut oil	4.0%
Salt mixture	4.0%
Vitamin mixture	0.5%

Diet Composition for Monkeys, Rabbit & Guinea pigs

Wheat flour	61.3%
Roasted Bengal gram	28.2%
Casein	1.0%
Refined groundnut oil	5.0%
Salt mixture	4.0%
Vitamin mixture	0.5%
Vitamin C	50mg/100g diet

Vitamin Mixture Composition

(dl) - α tocopherol acetate (E)	12.0 g
50% dry powder	
Menadione (K)	0.15 g
Thiamine (B ₁)	1.2 g
Riboflavin (B ₂)	0.5 g
Pyridoxine (B ₆)	0.6 g
Niacin	1.0 g
Pantothenic acid (Calcium salt)	1.2 g
Cyanocobalamine (B ₁₂)	0.5 μ g
Folic acid	0.1 g
Paraamino benzoic acid (PABA)	10.0 g
Biotin	40.0 mg
Inositol	10.0 g
Choline chloride	100.0 g
Total Vitamins put together	136.79 g
Starch	363.21 g

Total 500.00 g

500 g of vitamin mixture is used for every 100 kg of the diet prepared.

5 ml of vanitin is mixed in 15 kg refined oil tin to give 7000 IU of vitamin A and 400 IU vitamin D per kg diet when 4% oil is added to the diet.

Scale of Diet

Rat	15-20 g/day
Mouse	5 g/day
Hamster	15 g/day
Monkey	150 g/day
Rabbit	50-100 g/day
Guineapig	25 g/day

Extra Supplements for Monkey-Rabbit, Guinea Pig

	<i>Monkey</i>	<i>Rabbit</i>	<i>Guinea Pig</i>
Bengal gram (Sprouted)	20 g	20 g	25 g
Ground nuts	15 g	–	–
Plantain	1	–	–
Lucerne grass	–	100 g	50 g

Salt Mixture Composition for Rodents (Rat, Mice & Hamster)

Mineral	Per 100 kg diet (g)
Dicalcium phosphate	1250.00
Calcium carbonate (CaCO ₃)	555.00
Sodium chloride (NaCl)	300.00
Magnesium sulphate (MgSO ₄ ·7H ₂ O)	229.20
Ferrous sulphate (FeSO ₄ ·7H ₂ O)	50.00
Manganese sulphate (MnSO ₄ ·H ₂ O)	16.04
Potassium iodide (KI)	1.00
Zinc sulphate (ZnSO ₄ ·7H ₂ O)	2.192
Copper sulphate (Cu SO ₄ ·5H ₂ O)	1.908
Cobalt chloride (CoCl ₂ ·6H ₂ O)	0.012

A portion of the sodium chloride is mixed with potassium iodide and is ground well. The remaining portion of sodium chloride is added with other salts and ground well. Finally, the mixture of NaCl-KI is added with the NaCl and mixture of other salts and all salts are together ground well and the mixture is stored with sufficient quantity of starch, in an air tight container.

All minerals together	2405.352 g
Starch	1594.648 g

Total	4000.00 g
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Research

- (i) The Center has recently developed two mutant obese rat models for basic research in obesity and associated degenerating diseases like diabetes, cataract, infertility, ageing, *etc.* These rat models have shown some unique characteristics which are not seen in similar models available abroad and has the potential to earn foreign exchange for the country. These are under the process of getting US patent for their commercial use.
- (ii) The Centre has also identified an unique wild rat from the local rat population which has the potential to be developed into a new model for cancer and drug toxicity studies. This is the first wild white rat of its kind in the world which will also be patented very soon.
- (iii) The Center has recently taken the initiative to prepare base line data on clinical biochemical profile along with physiological parameters on various laboratory animals maintained in-house.

Recent Developments

- (i) A molecular biology laboratory has been added to Centre to strengthen the genetic typing of laboratory rodents.
- (ii) An animal physiology laboratory has been set up to measure physiological parameters of laboratory animals using mostly non invasive techniques.
- (iii) The Centre is involved in the 'pre clinical toxicological evaluation of various drugs and vaccines, including preclinical toxicology testing of herbal products and *Ayurvedic* formulations.

Supply of Laboratory Animals

The animals procured from this national facility (where they are maintained in ideal conditions) have to be maintained in similar conditions in the user institute. This is very essential to get reliable and reproducible experimental results.

Basic Requirements

Some basic requirements for laboratory animals are as follows:

Environmental conditions

Temperature	: 25°C ± 2°C throughout the year
Relative humidity	: 45-55% throughout the year
Ventilation (number of air changes)	: 16-20 fresh air changes/hour (Recirculation of air from animal rooms is not recommended).
Light-dark cycle	: 12 hours light and 12 hours dark or 14 hours light and 10 hours dark.
Light intensity	: 350-400 lux one metre above the floor level
Light source	: Fluorescent tube lights fixed in such a way to facilitate uniform distribution of light
Noise level	: Should be less than 65 decibels (should avoid all high frequency sound)

Hygiene and care

A high degree of hygienic conditions should be maintained. Periodical cleaning and sterilisation of cages, diet and water containers and cleaning and disinfection of rooms should be ensured. Animal rooms should be rodent and other vector proof Pest control measures should be undertaken periodically. Use of any pesticide that may have deleterious effect on animals should be avoided. Pyrethrum,

a plant extract can be safely used as a pesticide in animal rooms. Trained personnel should undertake the day-to-day care of the animals.

Nutritional requirements

The animal should be provided with clean feed and water. The feed should meet the nutritional requirements of the animals. The feed and water should be free from all pathogenic organisms. Boiled, cooled water can be used. Acidification of water with conc. hydrochloric acid (HCL) to adjust the pH to 2.8 to 3.2 is good (add about 3 ml of HCL to 1 litre of boiled and cooled water).

Ethical considerations and experimental protocols

Absolute care should be taken to avoid inflicting unnecessary and avoidable pain to animals. Experimental procedures on animals should be carried out only under the supervision/guidance of appropriately qualified persons. An Ethical Committee consisting of experts should approve experiments involving live animals. While planning any experiment it is recommended that one should consult a statistician for determining the minimum sample size.

The pricing of the animals is done on the basis of various inputs. It will work out to be cost effective (and quality assured) to buy animals from NCLAS rather than attempting to breed the animals in the user's premises. The Centre has the capacity and potential to breed and supply large number of different species and strains of laboratory animals as per customer's requirement.

Details of the species and strains of animals as well as animal feed available for supply and present price and terms and conditions of supply, and ordering procedures are furnished for the convenience of prospective buyers (Table I & II).

How to order the animals

- (i) While ordering please specify the following:
 - Species
 - Strain
 - Age and /or weight range
 - No. of animals required
 - Sex
 - Date on which the animals are required
 - Nearest airport
 - Distance from the airport to the Institute
 - Telegraphic code, fax number and telephone numbers
 - Residence telephone number of the officer ordering for the animals.
(this will facilitate communicating despatch details)

Although orders can be executed at short notice for small numbers of animals (50-100 mice or rats and 10-15 rabbits or guinea pigs), it is desirable to give advance notice of 30-40 days regarding requirement for animals. This will ensure better planning of the breeding programme and supply of animals according to the specifications and on the date required.

Table I. Price of animals w.e.f. October 1, 2002 (In Rupees)

Species	Strain /breed	Govt, non-profit making organisations			Private, profit making organisations		
		Weanling	Post-weanling	Retired	Weanling	Post-weanling	Retired
Mouse	Swiss (I.B)	35.00	50.00	30.00	40.00	70.00	30.00
	BALB/C An.N (I.B)	35.00	50.00	30.00	40.00	70.00	30.00
	C57 BL/6J (I.B)	35.00	50.00	30.00	40.00	70.00	30.00
Rat	Wistar/NIN (I.B)	65.00	130.00	50.00	100.00	175.00	70.00
	CFY/NIN (I.B)	65.00	130.00	50.00	100.00	175.00	70.00
	Fischer 344 N (I.B)	65.00	130.00	50.00	100.00	175.00	70.00
	Sprague Dawley(O.B)	65.00	130.00	50.00	100.00	175.00	70.00
	Holtzman (O.B)	65.00	130.00	50.00	100.00	175.00	70.00
	Wistar Kyoto (I.B)	65.00	130.00	50.00	100.00	175.00	70.00
	Guinea Pig	NIH: Hartly (O.B)		220.00			320.00
	NIH: Coloured (O.B)		220.00			320.00	
	Dunken Hartly (O.B)		220.00			320.00	
Rabbit	New Zealand (O.B)		750.00			1250.00	
Hamster	Golden (Syrian)(I.B)	65.00	100.00	50.00	75.00	130.00	60.00

Contd..

Species	Strain /breed	Positive pressure isolator bred SPF (Animal breeding nuclei). Price common for public and private organizations		*Pedigreed animals for breeding		*Timed pregnant animals	
		Weanling	Post weanling	Public	Private	Public	Private
Mouse	Swiss (I.B)			90.00	125.00	100.00	150.00
	BALB/C An.N (I.B)	125.00	150.00	90.00	125.00	100.00	150.00
	C57 BL/6J (I.B)			90.00	125.00	100.00	150.00
N:NIH(S) NUDE (ATHYMIC)	Heterozygous male	125.00	150.00				
	Heterozygous female	225.00	300.00				
	Homozygous male	225.00	300.00				
	Homozygous female	125.00	150.00				
Rat	Wistar/NIN (I.B)	150.00	200.00	170.00	250.00	200.00	250.00
	Sprague Dawley(O.B)	150.00	200.00	170.00	250.00	200.00	250.00
	Fischer 344 (I.B)			170.00	250.00	200.00	250.00
	Wistar Kyoto			170.00	250.00	200.00	250.00
	CFY/NIN (I.B)			170.00	250.00	200.00	250.00
	Holtzman (O.B)			170.00	250.00	200.00	250.00
	Hamster (Syrian)					125.00	220.00
Lactating mouse with litter					125.00	220.00	
Lactating rat with litter					325.00	500.00	
Lactating hamster with litter					200.00	325.00	

* Subject to availability and limited numbers only

Note:- (a) I.B : Inbred; O.B : Outbred; (b) Weanling: Rat & Mouse 21 - 24 days age; (c) Packing and forwarding charges will be extra. A sum of Rs. 150.00 will also be charged for each consignment as handling charges to meet the cost of telecommunication, transport, etc.,

Table II. Price of animal feeds w.e.f. October 1, 2002 (Rs./kg.)

Feed	Govt/non-profit making organisation	Private/profit making organizations
20% Protein (Rat, Mouse & Hamster)	60.00	70.00
14% Protein (Rabbit, Guinea Pig & Monkey)	45.00	55.00

(ii) Animals are generally supplied against advance payment either in cash or by demand draft payable to the Director NCLAS at the branches of the nationalised banks in Secunderabad. Out station cheques will not be accepted.

(iii) Animals can be either collected from our animal facility or air freighted to the nearest airport. In case of air freighting, packing, forwarding and handling charges will be extra. Animals will not be sent unaccompanied by rail.

Table III. Details of transport boxes available

Type	Dimensions (cms)/ Volumetric Wt. (kg)	Max. no. of animals accommodated	Price (Rs.)
Small	27 x 23 x 18/1.5	Adult mice	25
		Weanling rats	10
Mouse	55 x 30 x 15/4.1	Adult Hamsters	50 - 15
			200
Rat	55 x 30 x 20/5.5	Weanling	20
		Adult	10
Guniea pig	65 x 35 x 20/7.5	150 - 250 g	15
		>250g	10
Rabbit	65 x 45 x 25/12.5	Adult	5
			375

These transport boxes are meant for only carrying animals and can be reused after sterilisation. Animals should not be housed in these boxes for more than 24 hours.

- (iv) Appropriate kind of transport boxes for air freighting animals are available from the Centre. Those who come to collect animals from the Centre should bring adequate number of appropriate size cages (Table III).
- (v) Prompt acknowledgement of receipts of animals by air is requested.
- (vi) As soon as the animals are received they should be transferred to clean cages and fed clean water ad-libido. Transportation is a stress on animals. Therefore it is advisable to use the animals for experimentation or breeding only after an acclimatization period of 7 to 15 days in the new environment.
- (vii) Blood and blood products can also be obtained from the Centre against payment. The Centre also provides facilities for conducting experiments against nominal payment towards maintenance charges of animals (Tables IV & V).
- (viii) The Centre will not be responsible for any death, injury or escape of animals after they leave Centre's premises.

Table IV. Price of blood and sera (Rs/ml : Common for govt. and private organisations)

Species	Blood	Sera
Mouse	30.00	60.00
Rat	20.00	40.00
Hamster	30.00	60.00
Guinea Pig	40.00	60.00
Rabbit	30.00	60.00
Monkey	25.00	50.00
Sheep/Goat	15.00	30.00

Note: Packing and forwarding charges for blood and blood products will be 50% of the cost of the material.

Table V. Maintenance charges for conducting experiments at NCLAS (Per animal/day)

Species	Government organization	Private organization
Mouse	2.50	5.00
Rat	5.00	10.00
Guinea Pig	12.50	25.00
Rabbit	19.00	40.00
Monkey	32.00	50.00

Requests for free replacement of animals or refund of cost will not be entertained.

- (ix) Feed-back on the quality of animals supplied by the Centre in terms of experimental results will be appreciated. It will enable the Centre to monitor the quality of animals.
- (x) Indents for animals may please be sent to:

Officer-in-charge
 National Centre for Laboratory Animal Sciences
 National Institute of Nutrition
 Jamai Osmania
 Hyderabad - 500 007.
 Telegram : NUTRITION
 Fax : 040-27003317/ 27019074
 Telephone : 27008921-30 (On working days
 between 9.00 a.m. & 5.00 p.m.)
 Residence : 27016258, 27008671. 27155625
 E-mail : nappanveetil@yahoo.co.in;
jayakalyan@yahoo.co.in;
jpandurangi@yahoo.co.in;
nin@ap.nic.in;

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