

Animals for Teaching and Research in Educational Institutions- Need for Categorization of Animal Housing Facilities

Kambadur Muralidhar
Department of Zoology
University of Delhi
Delhi-110007
Email: kambadur@hotmail.com

In the last two decades there has been a lot of activity in our country in the form of debates and discussions on the issue of ethical practices in animal experimentation. This has a long history in many countries. For example the church was severely opposed to Galen's work on animals where he performed vivi-section. Vesalius also faced problems. Rene Descartes, the French philosopher of science and Mathematician was also a self styled Biologist. He made many remarks which affected Biology. One such remark was that animals have no feelings and hence can be freely used for dissection. There was no use of anesthetic those days. Although such crude animal experimentation was criticized, there was no legislation to regulate this. Only in the nineteenth century England and USA brought in some legislative measures to regulate research using animals. Slowly these legislative changes became more frequent. Other countries followed such practices. What resulted as a consequence was a running battle between scientists and government bodies. In our country also, in the initial days one witnessed two extreme and mutually exclusive stands taken. The Society for Prevention of Cruelty to Animals (SPCA) took strong exception to protocols followed by scientists even in leading laboratories. Either you are allowed to use animals for research by default or not permitted to use them. Scientists or activists took up adversarial positions. Because of negotiations among the stakeholders, compromises were made and some rationalization introduced in the use of animals for research. Guidelines were framed which satisfied both the stakeholders i.e. animal activists and scientists but to different degrees. The Indian National Science Academy (INSA) took the early lead, in nineties, in framing these reasonable guidelines through Prof PN Tandon. The National Institute for Nutrition did commendable job in this regard. The administrative framework for implementing these guidelines was also in place in the form of institutional animal ethics committees and the CPCSA rules. A quantum jump in research was observed when early 21st century; animal activists were replaced by working scientists as CPCSCA nominees. Scientists on their part followed guidelines more faithfully. The cost of maintaining animals was very high and few animal houses could afford this.

At present all types of small animal housing facilities are put in one basket and inspected under the same set of rules and guidelines for small animals which include lower vertebrates and invertebrates. The existing guidelines on the contrary are not very clear with regard to invertebrates except cockroach. Many zoology departments use insect cultures for nutritional and prey-predator relationship studies and also for bioassays. Different committees take different stands on this issue. While biomedical research uses rats and mice of specific strains that too inbred strains, the Zoology departments in more than hundred universities in the country mostly use out bred rats and

mice. The animal house budgets range from few thousands of rupees to 1-2 lakhs per year. If one looks at infra structure in terms of size, housing capacity, waste disposal rules etc the scenario is depressing. Majority have couple of temporary constructions labeled as animal houses. Delhi University has perhaps the largest animal house in the university sector having more than forty rooms for housing animals. In the pre-inspection era it was housing rats, mice, rabbits, guinea pigs, fish, birds and for some time even monkeys. Only in 2002, we got the first certification and license to breed and maintain animals. We have a duly constituted Institutional Animal Ethics committee. We have a full time veterinary officer who has specialized in small animals. However the types of animals are still only rats (Holtzman strain, out bred), Swiss mice (out bred), BALB/C strain mice (in bred), rabbits and cat fish. Occasionally it includes just housing of knock-out mice. What is important to note is that even this animal house does not come anywhere near the good animal houses that we see in CDRI, NII, IISc, Ranbaxy pharmaceutical company and other such educational and/or R&D institutions in terms of size, sophistication, building quality, housing quality etc.

Another feature of the university sector animal houses is the nature of experimental protocols that are implemented. Majority of the experiments are for teaching purposes which means year after year these are repeated. Not only that more than half the experiments use invertebrates (e.g. house fly, locust, insect pests), or fish which are not forbidden (sharks are forbidden; hence *Scoliodon* sp is not used). Some Zoology departments use birds like pigeons. Zooplankton and phytoplankton cultures are all done in good aqua houses. Teaching experiments in developmental biology try to use *Drosophila* sp but cannot avoid using frogs and chicken, even if it is to a limited extent. There is no regular use of dozens of in bred strains, nude mice, transgenic or gene-knock outs. Surgeries are simple like orchietomy; ovariectomy or simple bioassays are conducted where the end point is taking tissue weight or measurement of a biochemical or an enzyme activity. Majority of the animal houses in universities use ether or chloroform for anesthesia purposes. This is a forbidden procedure. However in some animal houses younger and newly appointed faculty would like to house and breed knock-out mice. But the inspection rules and ethical standards expected are same for every one from colleges doing UG teaching through Universities doing educational and capacity building service to biomedical research institutions (public sector and private sector). This is frustrating for sincere but simple workers.

As a result, when we analyze the ground realities of teaching/research activity, we get a disturbing or even a sad feeling with regard to animal housing facilities in the University or Educational sector. One, majority or all of them do not come up to the expectations in infrastructural aspects. Two, many of the practicing teacher/scientists do not follow strict guidelines in experimentation protocols or in infrastructure aspects. Three, about 50% of the experiments are purely for teaching/demonstration/educational training purposes. More than half of the research experiments also are simple MSc level experiments without complicated designs or requirement for specific inbred strains or nude mice or Knock-outs. Four, barring a couple of these universities, all of them do not have funds to build animal housing and maintenance facilities which can pass the ethics

committee inspection. Five and the most shocking fact is even in some well endowed universities, there is no conviction and willingness on the part of HODs to look after animal houses for teaching and research purposes. The consequence of all these is, there is uninspected and unapproved animal experimentation in many of the university departments and undergraduate colleges.

We are in an unenviable situation. Universities do not have sufficient funds to create animal houses like those of NII, CCMB etc. A recent proposal for a good animal house from a well known research institution asks for 47 crores of rupees. The universities also cannot afford to follow some of the operational guidelines like controlled anesthesia, waste disposal service etc. without special grants. Further there is a constant pressure from regulatory authorities to modernize syllabus not just in theory but also in laboratory work. To catch up with NCBS or CCMB as a modern biology laboratory appears to be a hopeless dream.

To solve this problem and get over this impasse, there appears to be only two solutions. One is to catalyze modernization by creating a special funding mechanism, say like the FIST programme of DST where departments are asked to compete for grants to upgrade animal houses. This would enable modernization and creation of satisfactory animal houses to cater to the true needs. The second solution is being less stringent with the guide lines for of infra structural requirements only.

I suggest Categorization of animal houses into 2 groups. The groups differ from each other purely based on the purpose for which they are being used. The purpose of animal house could be for biomedical research and/or drug trials including toxicology or could be purely for teaching with or without a little bit of research not involving drug trials/medical research. Accordingly, the size, infrastructure quality and rigor of experimental protocols in terms of ethical aspects should be different. The Category I animal houses should be prescribed for biomedical and health research institutions including those which conduct drug trials or involve use of in bred strains, nude mice, large animals including clinical work on humans and big animals, or handling infectious organisms etc. Here we need periodic review of the guidelines to enable crucial and strategic research for human welfare. Details of the revised guidelines can be worked out by consensus among the stake holders Category II animal houses should be recommended for all universities and colleges. Inspection should not be mandatory for those using invertebrates. Slightly less stringent conditions of animal husbandry should be prescribed for use of non-mammalian vertebrates or for use of laboratory bred (only out bred) rats, mice, rabbits. Only those which are purchased from registered and recognized animal houses should be allowed. If the universities and colleges are given special funding, Category II animal houses should be able to house even transgenic and genes knock-out animals. Only nude mice can be restricted to Category I animal houses. With all sincerity I am pleading for these changes to be brought out. Otherwise the whole University and College sector will throw up the biggest scandal in any civilized country in near future.