Experiments (FRAME), the Royal Society for the Prevention of Cruelty to Animals (RSPCA), and the Universities Federation for Animal Welfare (UFAW) established a Joint Working Group on Refinement tasked with arranging working parties to define improvements in the husbandry of laboratory animals. This is the third report produced by the Joint Working Group (previous reports covered the removal of blood and rabbit husbandry). The 14 authors comprise experts in a variety of aspects of murine biology, care, and welfare.

The report includes sections on the relationship between husbandry and the purpose of the procedure, the natural history and behaviour of mice in relation to their husbandry, husbandry, health and quarantine, catching and handling, identification, balancing supply and demand, transport, special problems of containment systems, genetically modified mice, wild mice, and areas for further research. A full list of references is provided. Each section has been well researched and considered and the Working Party's summaries and views are well laid out and clearly written. Where appropriate, chapters end with a list of specific recommendations.

Although the Working Party was able to make many practical recommendations for improvements in laboratory mouse husbandry, they also concluded that '...there is still a lot of research necessary to establish how current systems could be modified to satisfy the physical and psychological needs of mice in the laboratory...'; and also that there is an urgent need for evaluation of alternatives to current systems. More specifically, the report identifies several topics in need of research and these include: cage size, cage and substrate materials, cage cleaning, lighting regime, and assessing welfare.

This is a very valuable contribution to the literature on mouse husbandry and welfare. The aim of the Working Party is that this report will be widely circulated and be adopted as current best practice.

Refining Rodent Husbandry: The Mouse. Report of the Rodent Refinement Working Party (1998). *Laboratory Animals 32:* 233-259. Reprints obtainable from RSPCA, Research Animals Department, Causeway, Horsham, West Sussex RH12 1HG, UK (research_animals@ rspca.org.uk). Free.

Transgenic fish for food and science

It is likely that, under natural conditions, selection for fitness and good feelings are closely coupled. There would, under most circumstances, be no evolutionary advantage for an animal to feel good when its fitness was poor or threatened and, likewise, generally nothing to be gained by feeling bad when fit. In fact, there would be strong selection pressure against such mismatches of feelings and fitness. Pain must hurt enough to serve its purposes such as the guarding of damaged tissues and the provision of sharp lessons about things to be avoided, but not so much that it unnecessarily interferes with other body-maintenance functions such as eating and avoiding predators. Natural selection probably 'scrutinizes' the intensities of pleasures and pains very closely and keeps them tightly linked to health and evolutionary fitness.

When assessing the welfare of wild animals, good health (both physical and mental) is therefore likely to be a useful indicator that feelings are generally towards the more pleasurable end of the spectrum and thus (for those who believe welfare is largely about feelings) that welfare is good. In animals selected for particular characteristics such as rapid growth, high yields or indeed anything else, there is always a possibility that feelings and fitness may have become uncoupled so that an animal that is unfit may feel fine; or worse, that an animal which appears fit (say in terms of growth or yield) may not feel so. This is problem enough with animals whose genetics have been modified by traditional breeding techniques but might the potential for such uncoupling of fitness and feelings may be greater in transgenic animals? It is this possibility which makes any assessment of the welfare of transgenic animals very difficult.

This issue is illustrated by the recent review published by the Research Information Centre for Biology at the University of Utrecht on the state of transgenic technology in fish science and production and the ethical issues surrounding this technology. Transgenic coho salmon, containing a growth promoting gene from sockeye salmon, are 11 times larger than their natural siblings – but what of their welfare? It has been found that the transgenics swim more slowly than non-transgenic controls of the same length – but what if anything does this tell us about their welfare? Slowness in a non-transgenic salmon might be indicative of illness or pain, but if transgenics are slow is this because of pain or illness or because they are just plain slow?

Since 1985 fish have been used for fundamental and applied research in transgenic technology. For fundamental research they have some advantages over mammals, notably that they produce large numbers of eggs without the need for superovulation. Large numbers of fish are involved and work is being undertaken in countries all around the world. Various applications have been explored including: improving the economic efficiency of fish production through engineering increased growth rates, disease resistance or improved flavour; the use of transgenic fish for production of commercially useful compounds (eg insulin), and their use as biomonitors for detection of low levels of pollution. This booklet provides a useful review of various aspects of transgenic technology in fish and is a handy source of information on the subject. It is clearly written and the illustrations are, for the most part, helpful. In addition to welfare concerns, this publication addresses food safety, environmental, and social aspects (current attitudes and views on transgenic technology). The arguments are presented in a scientific and balanced style and the report will be of interest to all those interested in the debate on the rights and wrongs of genetic engineering, especially as applied to non-human animals. It ends with several recommendations, the first of which is that more welfare research is needed.

Transgenic Fish for Food And Science. A Technology Assessment on Transgenic Fish. K Waelbers (1998). Research Information Centre for Biology: Utrecht. 96pp. Paperback. Obtainable from, Wetenschapswinkel Biologie, Padualaan 8/Z 401, 3584 CH Utrecht, The Netherlands (ISBN 9052090890). Price DFL/NLG 15.00 (plus DFL 15.00 overseas postage).

Ethical review process in academia

The UK Government issued a requirement on 1 April 1998 that all establishments designate under the 1986 Act should have an ethical review process (ERP) satisfactorily installed by 1 April 1999. This document, which has been circulated by the Laboratory Animal Science Association (LASA) to its members, is a report of a meeting held to formulate guidelines to assist establishments in the process of setting up an ERP. The document builds on the experience of participants who had already had experience of either establishing or running an ERP, and addresses the requirements of an ERP, taking into account that different establishments will have different needs and that therefore the structure of ERPs may differ. The booklet provides a number of excellent bullet points addressing the roles of those involved in an ERP, how to review an existing ERP, and concerns that people may have about such issues as confidentiality or possible delays to experiments. LASA is to be commended for producing such a useful document in a comparatively short time. Moreover, as the ERP is seen as an evolving concept, the booklet should continue to be useful for a number of years to come.

The Ethical Review Process in Academia: A Laboratory Animal Science Association Roundtable Discussion to Assist in Setting up an Effective System. Edited by Maggy Jennings, Graham Moore and Bryan Howard (1998). 50 pp. Paperback. Obtainable from The LASA Secretariat, PO Box 3993, Tamworth, Staffordshire, B78 3QU. Price on application.