

Distasteful but necessary

The public must be told that experiments on primates remain essential for progress in some areas of biomedicine. But the scientists involved should also lead the way in pressing for improvements in animal welfare.

The initial reaction of one British researcher to the news that *Nature* was planning an article examining the use of primates in biomedical experiments was telling. He expressed deep misgivings, arguing that the climate of opinion in Britain is so unfavourable that any publicity could only be damaging to researchers who, like him, work on monkeys.

When rational people abandon public debate, the outlook is bleak. But in a country where researchers live in fear of animal-rights terrorists, and where an application to build a primate research facility was turned down because the local authority feared the implications for public order of protests against its construction, such fatalism is perhaps understandable, although misguided.

As *Nature's* overview of the current practice of primate research reveals, there is a strong case to be made for its continuation (see page 684). If researchers were not able to infect rhesus macaques with viruses closely related to HIV, for instance, we could hold out little hope of developing a vaccine against AIDS.

At one level, considering whether a primate experiment is justified is simple. The potential benefits must be weighed against the suffering caused, bearing in mind that primates may have a greater capacity for suffering than other animals. But this deceptively simple equation is devilishly difficult to balance, particularly if the benefits are not obvious to non-specialists.

Many people reluctantly accept experiments on primates where there is a clear prospect of preventing or curing a deadly disease. But electrophysiological recordings from monkeys' brains, for example, attract more public resistance. In such cases, scientists and the bodies that represent them must do a much better job in explaining

how such fundamental research is, in the long run, likely to lead to improved treatments for human disease. They should also explain the measures they take to minimize animal suffering, making it harder for protesters to misrepresent researchers as uncaring monsters.

Scientists in countries where protests against primate research have not escalated to violence should take a lead. Some US researchers fear that the British experience might be exported — militant animal-rights activists are networking across the Atlantic. The time to inform public opinion is now, not when the threat seems more immediate, when the battle for hearts and minds will already be half lost.

Researchers should do more than simply defend the status quo. Their case will be more compelling if they are seen to lead the way in pressing for a reduction in the use of primates where possible, and for improvements in animal welfare. For the former, attention should focus on whether some of the drug toxicity tests currently conducted on monkeys need to be done. If alternatives are avoided simply because companies don't want to risk regulators rejecting data from a lab animal with which they are unfamiliar, things need to change.

To boost animal welfare, researchers should push for dedicated facilities supported with veterinary scientists and specialists in primate behaviour. The days of labs holding primates in conditions that fail to meet the animals' behavioural needs should be over. The facilities also need self-sufficient breeding colonies — it is unacceptable for science to contribute to the decline of wild populations.

Some recent developments, such as the Dutch government's investment in the Biomedical Primate Research Centre in Rijswijk, are encouraging. But more must be done to improve facilities for research that, although distasteful, remains essential. ■

Pay or train to publish?

China's authorities place too much emphasis on the former and too little on the latter.

Most of the internationally recognized research by Chinese scientists is done outside China. In response, the Chinese government and universities pay indigenous researchers bonuses for getting their papers into international journals. Such bonuses, which can amount to thousands of dollars, have provided motivation. But they reflect an unbalanced focus on ends while neglecting the means: doing creative science. Moreover, impatience to secure research positions or to win such bonuses are partly responsible for problems in China with plagiarism and other misconduct.

China's graduate education system needs serious attention. Students in China and Chinese researchers who have teaching experience abroad criticize university and graduate education in China for its focus on textbook material and memorizing facts. As is well recognized in China, such a system cannot develop the creativity needed to achieve the international recognition in science that the universities and government seek. Many of the most promising students, who are also aware of the problem, go abroad for education or postdoctoral training — often never to come back.

A biological research institute in Shanghai (see page 683) is trying

to solve this problem. Teachers at its first-year graduate-school courses ask students to look at the latest international research, and teach them to ask questions about it rather than merely memorize it. The courses provide not only the desire but also the tools to do creative science. The students are rising to the challenge.

Such courses could be established elsewhere in China, and not only in biological sciences. Finding researchers who are able and willing to teach the courses, which are taught in Chinese, will not be easy. The courses in Shanghai depend on Chinese researchers based at top research institutes or universities in the United States, or who have had years of training outside China. With a budget that only covers their expenses, the researchers are working for free. The number of Chinese researchers worldwide who could teach the courses is increasing, but the funds are currently not in place.

The Shanghai scheme might motivate other university professors in China to look at different teaching methods and try to improve their own. Government support for such initiatives is needed. Researchers chasing bonuses can stimulate some quick results, but revamping graduate education would be a better bet for China's future. ■