

Book Reviews

DOI: 10.1017/S0016672302215670

Managing Plant Genetic Diversity. Eds. J. M. M. ENGELS, V. RAMANATHA RAO, A. H. D. BROWN, AND M. T. JACKSON. CABI Publishing. 2002. 487 pages. ISBN 0 85199 522 5. Price £75 (hardcover).

In the 1950s crop breeders were already producing the high yielding varieties that were to transform agriculture. However, prescient minds, and notably that of Otto Frankel, realised that these new varieties would drive to extinction the old landraces on which the next generation of varieties depended for primary variation. In the 1960s the UN Food and Agriculture Organisation (FAO) began the process of collecting crop landrace germplasm. Opinion has varied as to the value of such collections: some have seen them as poorly databased white elephants without sufficient collection information to make them scientifically valuable, others have seen them as global heritage beyond price, guarantors of the survival of humanity. The answer of course lies somewhere in between. Certainly, as this book makes clear, the standards of collection, databasing and maintenance have greatly improved since the early days. The gene bank idea is not new. The great Vavilov collected germplasm of crop plants in order to underpin plant breeding for Soviet agriculture. The story is told that so valuable were the collections considered, the curator starved to death in the siege of Leningrad rather than eat the scientific material. The promotion of Lysenko by Stalin and the killing of Vavilov in the camps did incalculable damage to Soviet agriculture.

This book takes stock of plant genetic resource (PGR) work at the end of the millenium and ponders the future. The International Board for Plant Genetic Resources (IPGRI) and the Malaysian Palm Oil Board (MPOB) called together some 230 participants for the 'International Conference on Science and Technology for Managing Plant Genetic Resources in the 21st Century' (SAT21), held in Kuala Lumpur in June 2000. Many of the 42 chapters are technical, referring specifically to particular crops or systems, but several cast the net much wider and truly consider what the future has in store for the PGR community. Of these I will pick out two. Peacock and Chaudhury,

as well as Angela Karp, take as their premise (quite rightly) the fact that the revolution in gene technology will push biology forward in the new 'century of biology' at an almost unimaginable rate. As the world's population is increasing by 160 people a minute, food production has to increase relentlessly, and access to genetic material is crucial. Gene technologies will make this variation more accessible but only if PGR centres (1) make major changes to the bioinformatics component of their operations and (2) come into much closer contact with cutting edge plant science research programmes. These research programmes will generate the knowledge for designing the screening assays. The molecular characterisation of economically important allelic variation is in its infancy, but, as Karp points out, recent technological advances in producing high resolution genetic maps, ESTs, SNPs and DNA chips are but early messengers of a high-throughput biology of the future, which will transform the world of PGR.

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DOI: 10.1017/S0016672302225677

Why Animal Experimentation Matters: The Use of Animals in Medical Research. Eds. E. F. PAUL and J. PAUL. Transaction (New Brunswick, USA). 2001. 224 pages. ISBN 0 7658 0025 X Price \$44.95 (hardback). ISBN 0 7658 0685 1 Price \$25.95 (paperback).

On the sleeve of this book, the Director of Public Information of a Primate Research Center says that 'Anyone who wants to know about the pivotal role that animal research has played in the triumph of medical science, get inside the head and heart of a laboratory researcher, or consider the strong legal and ethical case for animal research will welcome this book.' This quotation is revealing partly for its lack of sensitivity, as such research may involve getting inside the heads and hearts of laboratory *animals* literally rather than metaphorically. It also raises the

justification of animal experimentation, as well as the issue conveyed by the book's title.

Considerable evidence is marshalled for the contributions that animal research has made to medicine, for example in a historical chapter by Kiple and Ornelas, in a personal account by Morrison of *Making choices in the laboratory* and in a chapter by Zola arguing (p. 89) 'that the distinction between "basic" research and "applied" research is arbitrary, often vague, and not helpful in determining beforehand what kinds of research with animals are justifiable'. Most of the authors also mention the obligation to treat animals used in research 'as humanely as possible', as Morrison puts it (p. 55). However, the main thrust of the book is on why animal experimentation is justified and here the argument is partial, in both senses of the word. For example, Zola is correct that basic and applied research are not distinct categories, but wrong to imply that no research has ever had trivial intentions yet severe effects on animals. A major limitation is that the book is almost entirely devoted to countering animal rights activists who want complete abolition of animal research. This category, described as the animal liberation/animal rights movement or ALARMists by Nicoll and Russell, is regarded as uniform and completely resistant to discussion. Unfortunately, most of the authors here do not engage in informed ethical discussion either. Only Frey, in *Justifying animal experimentation: the starting point*, properly addresses the point that an emphasis on consequences of research (the implicit meaning of why animal experimentation matters) and an emphasis on rights are different ethical approaches. Similarly, Peter Singer is several times described as an abolitionist, which is logically impossible for a utilitarian. Nicoll and Russell, in what purports to be *A Darwinian view of the issues associated with the use of animals in biomedical research*, believe that natural selection acts on whole species, an approach called group selection that was refuted decades ago. The chapter I most looked forward to reading, for potentially interesting controversy, was Engelhardt's *Animals: their right to be used*. His argument turns out to be crude: humans make the rules, so humans have the right – indeed, the duty – to do anything to animals for human benefit, including bestowing on them (p. 178) 'The right to be hunted', 'The right to be used in the testing of cosmetics' and so on. Perhaps this is tongue-in-cheek. It is certainly wantonly provocative.

Most culpably, the arguments of more moderate animal protectionists are largely ignored. I was asked

to review this book while working on animal welfare and ethics at the University of Edinburgh, UK. The views expressed are my own, but I should point out that my current employer, the Humane Society of the United States, does not advocate abolition of animal research. There is little acknowledgement in the book that the obligation of scientists to treat research animals as humanely as possible, the regulations that require them to do so, and the 'techniques that researchers utilize to minimize the use of animals' mentioned (p. 5) by editor Ellen Paul in her Introduction, largely developed under pressure from animal protectionists. Paul makes it clear (on p. 3) that she is not an expert in the field, which perhaps partly explains the book's ethical incoherence. She claims (p. 3) that 'A ban on experimentation – or the implementation of a vastly more restrictive regime than the one that the [US] government presently enforces – would leave the population vulnerable to the next deadly AIDS or Ebola virus that suddenly appears.' Other authors imply that even slightly more restrictive regulations would be disastrous (or in Engelhardt's framework morally wrong), yet there is no detailed defence of this position. There are at least three strong reasons why proper ethical discussion of this issue is important. First, Frey takes the wind out of his colleagues' sails by saying that abolitionism is unlikely to spread. If so, the real question is not whether animal research should continue, but how it should be controlled. We may also note that this book will not help to combat abolitionism, as abolitionists will find it unreadable. Second, Brody, in the book's other ethically coherent chapter, shows that the ethical basis for European legislation is much more plausible than that underlying the less restrictive US policies and espoused most explicitly by Engelhardt. Third, all the authors are American, and the idea that European style restrictions on animal research would dangerously curtail medical progress suggests a wilful disregard for the many medical advances made outside the US under just such restrictions. Such restrictions reduce animal suffering, so there is a good argument even on a straightforward utilitarian basis for greater control of animal experimentation. That argument will not be countered by a coy picture of a healthy mouse sitting on top of a test tube, even when paired with a picture of a hospital patient as on the front of this book.

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