

has yet been found, probably because the number of gene differences in any test and the scale of the tests is still small. Particular enzymes show up to eleven variants in the different species, but these cannot be transferred from one species to another.

In the coccidial genera *Eimeria* and *Toxoplasma*, gene recombination has also been shown to occur, using enzyme variants and drug resistance, and the diploid stage is restricted to the early oocyst. In trypanosomes, on the other hand, the life-cycle is believed to be mainly diploid, but no morphologically recognizable gametes have been seen, and no attempt at conventional genetic analysis by crossing in the host and scoring the progeny has yet given convincing evidence.

The succession of antigens which develop during an infection by *T. brucei* enable the parasite to escape successive waves of immune response by the host, and make the design of an effective vaccine against this organism appear virtually impossible. Molecular geneticists are now analysing the nature of this sequential variation, which has been shown to involve a number of genes, only one of which can be switched on at any time. The basis of the control of this variation is not yet understood, but there is evidence that it involves imperfect duplication of the antigen gene to be switched on, and transfer of the copy to an 'expression-linked site'. Any trypanosome clearly possesses a large antigen repertoire, which can differ among clones of the same subspecies: the analysis of this major and versatile system will certainly produce surprises. The problem of antigenic variation in malaria parasites is also under study by molecular techniques. Whether these approaches will lead to the development of effective vaccines is very much a moot point.

I suspect that most geneticists will not be well informed on the subject of this book, unless they have colleagues struggling with its problems. The 300 or so papers listed in the bibliography are to be found mainly in journals they are unlikely to scan – the various parasitology, tropical medicine and protozoology journals, and even a journal entitled *Military Medicine*. But the field is at an exciting stage and Walliker's book can be recommended to those who want to get up to date with it.

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Yet another microbiological journal but, unlike many of its competitors, it will probably fill a gap. The journal intends to publish original papers and invited reviews covering methods in all aspects of microbiology, excluding virology and immunology. In the past many of the microbiological methods papers have tended to be published in the biochemical literature – will this continue? Only time, and its availability in libraries, will tell if this journal is to be a success. I wish it well.

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