

THE FUNGAL NUCLEUS. K. Gull and S. G. Oliver (Eds). Cambridge University Press, 1981. Pp. 358. Price: £32.50.

This volume presents papers given at the meeting on the Fungal Nucleus, organised by the Physiology Group of the Mycological Society held in London in April 1980. It consists of 15 review-type papers, with illustrations, electron micrographs, detailed bibliography, subject and specific names index. Essentially, the topics covered are: ultra-structure of the nucleus, biochemistry of DNA binding proteins and chromatin, parasexual and meiotic genetics, and cell physiology studies.

Papers on the ultrastructure of interphase, mitotic and meiotic nuclei deal mainly with structure and behaviour of the nuclear envelope, microtubule organizing centres, the synaptonemal complex (for meiosis) and the chromosomes. One paper discusses models for force generation during mitosis, whilst another deals with fungal microtubules and microtubule proteins, both *in vivo* and *in vitro*, with particular reference to *Physarum polycephalum*.

The biochemistry papers, although interesting, tend to wander into general reviews rather than remaining specific to fungi. The paper on single stranded DNA binding proteins gives a generous review of prokaryote proteins, whilst the fungal section concentrates on the protein from *Ustilago maydis*. Chromatin structure and function is reviewed with the emphasis on *P. polycephalum*, and there is an interesting section on the roles of histone acetylation and phosphorylation during the cell cycle.

Parasexual processes in fungi are reviewed in detail with reference to nuclear fusion, mitotic recombination, non-disjunction and the factors which affect these. Segregation at meiosis and how this relates to gene conversion, crossing-over, chromosome pairing and the synaptonemal complex is also reviewed.

The cell physiology papers cover a wide range of topics. Somatic incompatibility with particular reference to *P. polycephalum*, is one topic. A large section of this deals with the hypothetical reasons for the phenomenon. There is a short review of the effects of UV-irradiation on yeasts and filamentous fungi, and on the *in vivo* analysis of chromosomal DNA replication in yeast. Genetic regulation of a simple developmental process, namely monokaryon-dikaryon transition in *Schizophyllum commune*, is reviewed. There is an interesting paper on the control of RNA and protein synthesis in yeast. This concerns the stringent response, and reviews work on "shift-up", starvation and protein inhibition experiments. The final article deals with the concept of "start" in yeast, as a defined part of the cell cycle, which controls cycle length, as well as allowing the cell to move into one or other of several distinct cycles.

The book is well made, although rather expensive; in addition, it lacks any information obtained from the recent development of recombinant DNA techniques in fungi. However, it is a useful book and should remain so for several years.

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