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BOOK REVIEW

LOSICK, R., SHAPIRO, L. (ed.): MICROBIAL DEVELOPMENT. Cold Spring Harbor Monogr. Series, Monogr. 16. — Cold Spring Harbor Laboratory 1984. 303 pp. Paperback US \$ 28.—, outside US \$ 33.60; cloth bound US \$ 52.00/62.40.

This book is based in part on the Conference on Microbial Development held at Cold Spring Harbor Laboratory in 1983. In eleven chapters it reviews developmental aspects of the cellular division and differentiation, cell-cell communication, cellular social behavior and morphogenesis. These general biological phenomena were compared in various experimental organisms and were described in morphological, physiological, genetic, biochemical and molecular terms. In the first two chapters, the principal features of the cell-division cycles of *Caulobacter crescentus* and *Escherichia coli* are set out. The course of events and factors leading to differentiation and transformation of a vegetative cell of *Bacillus* or *Streptomyces* into a spore are described in the next two contributions. In both organisms, the differentiation is triggered by environmental signals (nutrient deprivation), but their morphology and the way they differentiate differ.

In the remaining six papers, more complex developmental systems, depending on interactions between cells, are considered. In mating interactions of *Streptococcus* and *Saccharomyces* specific chemical signals, sex pheromones, induce genetic exchange in the case of bacteria and fusion to a diploid state in the case of yeast. *Mycobacteria* and *Dictyostelium*, even though separated by the prokaryotic-eukaryotic evolutionary gap, are similar in many aspects of their social behavior. Nutrient deprivation induces coordinated movement of many thousands of cells in these microbes. The cells aggregate into large masses, which are capable of integrated movement. These masses, in turn, form elaborate fruiting bodies, composed of two specialized cell types: stalk cells and spore cells. Such behavior resembles the formation of tissues in multicellular organisms. One of the most sophisticated examples of microbial development is the formation of root nodules by the symbiotic interaction of *Rhizobium* with its leguminous plant host, which is the subject of the final chapter.

This monograph is an excellent, up-to-date review of developmental processes in unicellular organisms. As the topic is discussed from the point of view of different disciplines, the book can be recommended to microbiologists, microbial geneticists, developmental biologists, biochemists and molecular biologists.

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